

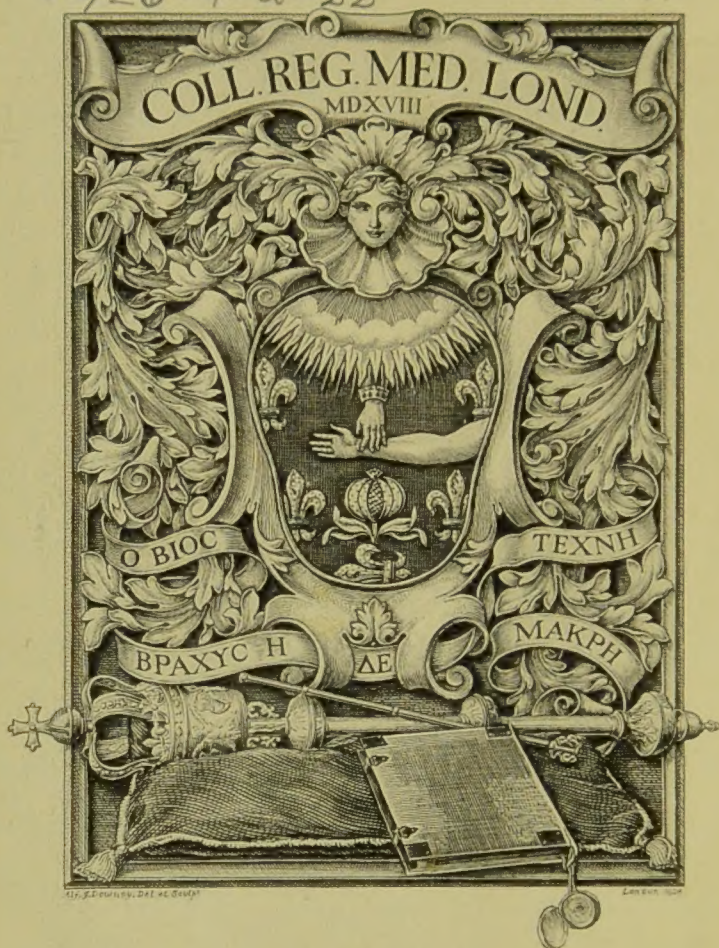


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M E D I C I N E, S U R G E R Y,

AND THEIR

ALLIED SCIENCES,

FOR

1863.

EDITED BY

MR. JAMES HINTON, DR. HANDFIELD JONES,
MR. WINDSOR, DR. MEABURN BRIGHT,
AND
DR. HILTON FAGGE,

FOR

THE NEW SYDENHAM SOCIETY.

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REPORT ON PHYSIOLOGY.

BY

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AURAL SURGEON TO GUY'S HOSPITAL.

GENERAL PHYSIOLOGY.

I. CELLS, ELEMENTARY ORGANISMS, AND CORPUSCLES.

- REICHERT, C.—*On the New Reforms in the Doctrine of the Cell.* Reichert und Du Bois Reymond's Archiv, Nos. 1 and 2, 1863.
- BRÜCKE, E.—*On the so-called Molecular Motion in Animal Cells, especially in the Saliva-corpuscles.* Moleschott's Untersuchungen, vol. ix, p. 7.
- ROLLETT, A.—*Experiments and Observations on the Blood.* Moleschott's Untersuchungen, vol. ix, p. 22.
- ROBERTS, W.—*On Peculiar Appearances exhibited by Blood-corpuscles under the influence of Solutions of Magenta and Tannin.* Proceedings of the Royal Society, vol. xii, p. 481.
- VON RECKLINGHAUSEN, F.—*On Pus- and Connective-tissue-corpuscles.* Virchow's Archiv, vol. xxviii, p. 157.
- WALDENBURG, L.—*Diseases of the Structure of Plants, produced by Irritation; and comparison of them with Affections of the Animal Tissues. A contribution to Cellular Pathology.* Virchow's Archiv, vol. xxvii, pp. 145 and 322.
- BUCKHOLZ, R.—*Some Experiments on the Artificial Production of Bone.* Virchow's Archiv, vol. xxvi, p. 78.

Reichert criticises at great length the views of Schultze and Brücke on the nature of the cell (see 'Year-book,' 1862, p. 2). He insists especially upon the presence of the cell-membrane as an essential constituent, and adduces various facts which he considers inconsistent with the opposite view. He denies that the *Amœba* is a mere mass of sarcode, affirming that it possesses a distinct membranous envelope, and that the supposed fusion of the pseudopodia is an ocular deception. He adduces also the reaction produced by treating the blood-corpuscles of the frog with very dilute nitric acid (2 or 3 per cent.), as evidence of the presence of a cell-membrane, and as proof also that its contents are perfectly fluid. The granular precipitate which forms sinks freely through the cell, and collects in heaps on the inner surface

of its envelope, the external contour of which is unaffected by them. In respect to the structure of the striated muscular fibre, he thinks there is no sufficient evidence to prove that it consists of different substances, arranged alternately. A spiral arrangement, or even the effect of elasticity, supposing an habitual tension, might account for the appearances.

Brücke, on the other hand, returns to his argument (see 'Year-book,' 1862), that the phenomena observed in the saliva-corpuscles are inconsistent with the ordinary cell doctrine, and that even if the motions seen within the corpuscles be merely of the same kind as the ordinary molecular movements of inorganic particles, they yet take place in such a way as to prove the existence within the corpuscles of segments or partitions. But, in fact, these movements appear to be determined by the life of the corpuscle, and cease with it; while the motions produced in different cells, on adding salt, urea, or acids, exhibit not only distinctions between them, but in some cases forms which a mere membrane surrounding a fluid could not assume; as, for example, two, three, or more portions, separated by constrictions, and resembling a cell about to multiply by budding or segmentation. On subjecting the salivary corpuscles to a magneto-electric stream, Brücke observed what he considered to be a rupture of the cell at a definite point, resulting from its own contraction, as occurs in some molluses.

Rollet also, from observations on the mode of aggregation of the blood-corpuscles, and from various experiments on the effect produced upon the blood by freezing, by the electric discharge, and by the withdrawal of its gases, comes to the following conclusions:—(1) That the idea of the cell, in Schwann and Schleiden's sense, is not applicable to the blood-corpuscles. (2) These bodies consist, as regards their chief mass, of a weak, elastic, extensile substance. (3) We can distinguish in them at least two elements:—the crystallizable substance, hæmatoglobulin, and a peculiar stroma. (4) Both are held together in a way not known to us. (5) By external influences, they can be separated from each other. (6) To these separating influences belong, besides the known chemical agents, also a high degree of cold (freezing), the electric discharge, and the pumping out of its gases from the blood. (7) After the division, either both portions dissolve in the unaltered serum, or a portion of the stroma remains undissolved. (8) Hæmatoglobulin crystallizes, so far as is yet known, in two systems—the rhombic, and the hexagonal. (9) The crystals are pleochromatic. (10) The formation of crystals is increased by the dilution of the blood with water; but we may also observe an abundant formation of crystals in unaltered serum, when the composition of the corpuscles is modified by very various influences, as freezing, electrizing, &c.

On the other hand, the observations of Dr. Roberts, on the effects of a solution of magenta or of tannin on the blood-corpuscles, have led him to very different results. He considers that the appearances presented are best explicable on the supposition that each corpuscle is

surrounded, not only by one, but by two membranes; that within the outer covering there exists an interior vesicle, which encloses the coloured contents, and in the ovipara the nucleus: so that the blood-corpuscle is anatomically analogous to a vegetable cell, and the inner vesicle corresponds to the primordial utricle. The appearances on which this view is founded are, briefly stated, the following:—A solution of magenta added to a drop of blood brings out at some point of its surface a spot or particle, evidently organically connected with that surface, and assuming from the magenta a deeper colour than the general contents of the corpuscle. This spot presents various aspects, and in some cases forms a delicate line, surrounding the greater part of the circumference of the disc. On adding tannin, in proportions varying for different bloods, there took place suddenly, after a gradual swelling of the corpuscle, a projection, in one or more spots, from its surface. This projection was of granular appearance, resembling very closely, but not exactly, the general cell-contents, and was frequently surrounded externally by a distinct hood. In some cases the outline of the corpuscle could be distinctly traced through the projecting mass. After a few days the cells thus altered burst, and became disintegrated. They appeared to have been rendered solid by the tannin. Dr. Roberts suggests, that the inner membrane of the corpuscles in these cases may have been caused to burst, allowing a partial exudation of its contents beneath the outer capsule, and then immediately reuniting itself. The hooded appearance might be due to the imbibition of fluid between this microscopic drop and the outer envelope. The exact identity of the appearances in the blood-discs of the ovipara and of the mammalia, discountenances Wharton Jones's view that the latter answer to the nuclei of the former, and lends support to the view that these corpuscles are homologous as wholes.

V. Recklinghausen reports some new observations on the contractility of cells. He irritated the cornea of the frog with sulphate of copper, and placed under the microscope some of the aqueous humour which had become opaque in consequence of the irritation. He found it to contain corpuscles, in appearance identical with pus-corpuscles; these continually changed their form, putting out and drawing back processes of various lengths and thicknesses, sometimes branching, sometimes reuniting, so as to form a network. The changes, in short, resembled very closely those of the pseudopodia of the Radiolaria. Changes of density in the liquid, whether by evaporation or by addition of various solutions, soon brought them to a standstill. Similar motions were observed in the pus-corpuscles taken from man and mammalia, and, in the former, similar internal molecular motions to those which Brücke has described in the saliva. Passing from effusions to the connective tissue itself, v. Recklinghausen found that, by making a fine section of the cornea of the frog, and placing it with some of the aqueous humour, uncovered, but in a cell adapted to prevent evaporation, beneath the microscope, corpuscles could be seen in it, which also changed their form similarly to, but somewhat more restrictedly than, the pus-corpuscles. Further, through their changes of form these

corpuscles also changed their place, the body of the cell being drawn into the projected process, and another projection then being put forth. In the course of half an hour a corpuscle would thus sometimes traverse the whole field of the microscope. Besides these moving cells, there are others of larger size, and having numerous processes—the ordinarily described corpuscles of the cornea; these are immovable. The moving corpuscles pass over them, but always appear distinct from them; the former seem to pass, as it were, along the processes of the latter, and to be resisted in their progress by the homogeneous substance that lies between them. V. Recklinghausen holds that the locomotion of the corpuscles proves the existence of canals with expanded interspaces in the substance of the various tissues he examined. He found the peritoneum and pleura in rabbits among the most suitable. In inflammation the moving corpuscles increase in number in the early stage; the immovable ones appear, perhaps, to diminish. V. Recklinghausen, however, could not obtain clear evidence that the former were derived from the latter, with or without their subdivision, although he met with various forms that seemed to be intermediate between the two. By excising portions of the cornea in the frog, and placing them within the lymph-sac, for from four to eight days, the number of moving corpuscles in them was increased; and by first using means to cause the death of the portion of cornea used, and placing finely powdered cinnabar in the vessel, V. Recklinghausen convinced himself that the fresh corpuscles entered it from without. Like the *Amœba*, they took up the coloured fragments into their substance. This fact he thinks of importance, in respect to the process of organization in effused lymph. The possibility is not to be lost sight of that the cells may move into it from the adjacent textures.

To test how large the canals through which the cells pass must be, v. Recklinghausen introduced extremely thin tubes of ivory, filled with a solution of sugar, and closed with collodion, into the lymph-sacs, but neither within them nor within any vegetable substance did any cells make their appearance. The same was the case with moderately firmly coagulated albumen.

In this property of contractility another point of resemblance between pus-corpuscles and the colourless corpuscles of the blood is established. The question is raised also, whether many of the cells found on the internal surfaces of the body are not truly such moving corpuscles which have made their way thither from within; whether, for example, the saliva-corpuscles may not be such. Finally, v. Recklinghausen is of opinion that the star-formed figures which are obtained by His from connective tissue by the use, first of nitrate of silver, and then by maceration in acids, are not, as he supposes, the corpuscles of the tissue isolated, but that they represent the coagulated albuminous contents of a system of lacunæ with radiating canals.

In the same number, p. 237, Virchow adds a report of similar changes of form which he had some time ago observed in the cells of cartilage and of enchondromatous tumours; from round cells arise numerous branching and interlacing processes, and conversely branching cells gather themselves up into spherical ones.

With a view to throw more light upon the doctrine of the essential part played by the cells, independently of blood-vessel or nerve, in animal nutrition, Waldenburg submitted to accurate observation the stems, leaves, seeds, &c., of plants which he had previously injured in various ways. He found, as the general result, that the cells immediately around the injured part degenerated, and either withered or decayed, the green chlorophyll changing, by a passive decomposition, into the yellow xanthophyll. The cells adjoining these underwent a process of enlargement and multiplication by subdivision, their walls becoming greatly thickened. If seeds were injured, similar results ensued when they were caused to germinate. The production of resin, gum, or wax, is not a secretion, but a process analogous to fatty degeneration. The cellular phenomena which follow irritation are essentially alike in plants and animals, and lead to similar results. Changes in vessels and nerves are not essential precedents and exciters of inflammation, which consists in an alteration primarily of the metamorphosis of matter within the cells. The cells, however, are not susceptible of a direct external irritation, but possess a sensibility only to internal disturbances in the exchange of the nutritive fluids. It is not the act of injuring, but the condition of being injured, that perverts their action. Waldenburg thinks that inflammation should not be considered as existing in plants, but that the word should have a narrowed meaning, and imply an excited activity of the tissue, *plus* blood-congestion.

Buckholz adds some further particulars respecting the formation of bone from transplanted periosteum. His observations differ from those of Ollier in some respects, especially as to the existence of the subperiosteal blastema, which Buckholz denies. The bone is formed in the thickened substance of the periosteum itself, through the medium of the cells which it contains in a contracted and shrivelled form. These cells enlarge and multiply, and behave in a way precisely similar to those of cartilage, which he believes in some cases precedes, in the strictest sense, the deposit of the calcareous matter, though the presence of chondrin has not been demonstrated. Within two or three days the transplanted periosteum is injected and swollen, and bands of adhesion form between it and the surrounding tissue. It is speedily regenerated in the parts from which it has been removed: in fourteen days Buckholz has seen a perfect membrane re-formed, fit for renewed transplanting.

II. FORMATION OF ORGANIZED BODIES.

PASTEUR, L.—*A new Example of Fermentation, determined by Infusory Animalcules able to live without Free Oxygen, and apart from all contact with Atmospheric Air.* Comptes Rendus, March 9th, 1863, p. 416.

PASTEUR, L.—*Examination of the Rôle ascribed to Atmospheric Oxygen in the Destruction of Animal and Vegetable Matter after Death.* Comptes Rendus, April 20th, 1863, p. 734.

PASTEUR, L.—*Researches on Putrefaction*. Comptes Rendus, June 29th, 1863, p. 1189.

POUCHET, F. A., JOLY, N., and MUSSET, C.—*Experiments on Heterogenic (Spontaneous Generation), conducted in the Interior of the Glaciers of Maladetta, in the Spanish Pyrenees*. Comptes Rendus, Sept. 21st, 1863.

RAULIN, M.—*Chemical Studies on the Vegetation of Moulds, particularly of Ascopchora nigrans*. Comptes Rendus, July 27th, 1863, p. 228.

M. Pasteur considers that his previous experiments have entirely disproved the hypothesis that fermentation can be effected by the influence of decomposing albuminous substances. The sole agents in the process are animalcules, or their germs, of which fact he now adduces another instance. The tartrate of lime, mixed with a minute quantity of phosphate of ammonia and of alkaline and earthy phosphates, best derived from the ashes of the animalcules it is desired to reproduce, is placed under water which has been entirely freed from air, and cut off from all access to the atmosphere. Under these circumstances it undergoes no change. If, however, there be added to it the very smallest number of the infusoria produced by the spontaneous fermentation of the tartrate of lime, they gradually multiply, without any access of air, until there remains no more of the salt, but only a mass of dead vibrios. Thus, whatever may be the cause of the fermentation of the tartrate of lime, it is determined by the presence of an animalcule capable of living without free oxygen, and apart from the atmosphere. It is true that the liquid is exposed to the air for a brief period during the introduction of the infusoria; but the study of this subject has shown that the precautions previously taken to cut off the supply of air are altogether unnecessary, and has also led M. Pasteur to new views of the most remarkable kind on infusorial life. The animalcules which produce fermentation are not only capable of living without free oxygen, but they are killed by the access of air: how, then, can fermentation arise in substances freely exposed to the atmosphere? The answer is very simple. There are first developed under these conditions a multitude of monads, bacteria, &c., which live by means of air, and these in the space of a few hours consume all the oxygen contained in the mass, converting it into a little larger quantity of CO_2 ; and then only appear the other infusoria, which cause fermentation properly so-called, and which live without free oxygen. These infusoria are nourished by the fermenting body, and the supposed fermentation by contact does not exist. Albuminous bodies are of use in fermentation only by providing the necessary nitrogen, and may be substituted by salts of ammonia. There appear, then, to be two modes of life among infusoria—one carried on by the aid of the oxygen of the air, the other, not heretofore recognised, apart from oxygen, and effected by means of fermentation. Here, M. Pasteur thinks, is certainly the secret of all fermentations properly so-called, and probably of many of the actions, normal or abnormal, of the living organism.

Pasteur has made also further experiments, by enclosing a solution of yeast mixed with sugar and water, urine, blood, milk, moist sawdust,

&c., in retorts, with air which had been freed from germs by a high temperature. After the lapse of nearly three years no putrefaction was found in any case, and only in that of the milk was the amount of free oxygen reduced to less than 11 per cent.; in most cases there was a loss of not more than 2 or 3 per cent. To eliminate the possible effect of boiling, blood drawn direct from the vessels of a healthy dog had been kept in the presence of air freed from germs for six weeks, and underwent no putrefaction. Only 2 or 3 per cent. of the O was converted into CO_2 . Under these circumstances, however, blood-crystals form with remarkable facility. After a few weeks, the more quickly the higher the temperature, the blood-globules entirely disappear alike from serum and clot, and innumerable needle-shaped crystals are seen in both.

In another paper Pasteur continues the subject of the peculiar life of the vibrios which produce fermentation. He first observes that the word putrefaction, indicating spontaneous changes in organic matters attended with a foetid smell, is used in a sense at once too narrow and too wide. Rightly, it should include processes unattended by fœtor, such as the butyric fermentation of lactate of lime, the factor depending altogether on the presence of sulphur; and it should not include gangrene, which is essentially distinct. In all cases of putrefaction or fermentation the agents are vibrios, which perish by contact with oxygen. When a liquid putrefies in the presence of air, there take place two distinct processes—first, monads and bacteria form, and change the O it contains into CO_2 ; then, if their germs are present, there appear within the mass vibrios, which institute the process of fermentation. The monads, &c., still form a layer on the surface, guarding the vibrios from the air, and multiplying indefinitely. By the vibrios the nitrogenized matters are decomposed into simpler, but still complex, compounds, which, through the agency of the monads and bacteria, are then “burnt,” and resolved into inorganic binary compounds, HO , NH_3 , CO_2 . If no germs of vibrios are present, no further change takes place after the monads have consumed the O; the liquid remains indefinitely without either putrefying or fermenting. The case is rare, but M. Pasteur has met with several instances. Thus fermentation, though it might seem to be impossible in the presence of air, is, in fact, only then the most complete. When it takes place in the absence of air, the intermediate substances resulting from it remain without further alteration. The fermentation of sugar affords an example, the alcohol in presence of air being acclified and burnt; so also with the butyric fermentation of the lactate of lime. A very thin layer of organic liquid exposed to the air neither ferments nor putrefies, inasmuch as vibrios cannot form in it; it presents the phenomena of combustion only.

Pouchet adduces experiments against the assertion of Pasteur, that on mountains air can be collected, without modification of its chemical or physical properties, which will not produce any alteration even in a very putrescible liquid. He obtained air, with all the precautions mentioned by Pasteur, at a height of 3000 mètres, (186 mile, 1000 m, higher

than the spot at which Pasteur made his experiments at Montauvert). Phials which contained an infusion of hay, boiled for an hour and hermetically sealed during the act of boiling, were opened by a file heated to redness, some at Recluse, and others within a deep and narrow crevasse in the glaciers of Maladetta. They were then immediately reclosed over a lamp, and examined after three or four days separately by himself at Pouchon, and by MM. Joly and Musset at Toulouse. The results agreed perfectly. The phials contained dead bacteria and monads in prodigious quantity; a few living specimens of *Bacterium articulatum*, some amœbas, vibrios, tufts of mycelium, &c.

Pouchet found also that 150 cubic decimètres [588 cubic inches] of air collected at the same time, the atmosphere being calm, did not contain a single egg, a single spore, or a single particle of organic debris.

Raulin put to the test the growth of *Ascophora nigrans* in media consisting entirely of mineral matter. He found that its growth might be as rapid in these as in organic solutions, and that it proceeds regularly until some essential element fails. The most useful mineral substances are, in the order of importance, phosphorus, potassium, magnesium, sulphur, manganese; these were employed in the form of phosphate of ammonia, carbonates of potash and magnesia, sulphate of ammonia, carbonate of manganese. The absence of phosphorus from a mixture of the whole would reduce the resulting growth from twenty grammes to half a gramme; of manganese, from twenty to five. The quantity of these elements which sufficed formed but a fraction of the total weight of the plant which might be produced—less than one fiftieth. The abundant development of the mucedo demanded the union of a sufficient number of simple bodies, these being required in very different weights. He could not find that any free nitrogen was absorbed by the plant in its growth.

III. BLOOD.

SCHMIDT, A.—*Further Observations on Fibrin and the Causes of its Coagulation.* Reichert und Du Bois Reymond's Archiv, 1862, pp. 420—469, and 533—564.

LISTER, J.—*On the Coagulation of the Blood.* Croonian Lecture, 1863. Proc. of Royal Society, vol. xii. p. 581.

THIRY, L.—*On the Ammonia-contents of the Blood, the Urine, and the Expired Air.* Henle and Pfeufer's Zeitschrift, vol. xvii. p. 167.

SMEE, A. H.—*On the Artificial Production of Fibrin from Albumen.* Proceedings of Royal Society, vol. xii. pp. 399 and 505.

PANU, P. L.—*Experimental Researches on the Transfusion, Transplantation, or Substitution of Blood, in its Theoretical and Practical Relations.* Virchow's Archiv, vol. xxvii. pp. 240—296 and 433—460.

Schmidt carries further his studies on coagulation (see 'Year-book,' 1862, p. 20). He especially seeks to establish—(1) the relations

which exist between the fibrino-plastic substance given off by the free cells and tissues, and the fibrino-genic substance contained in the coagulable fluids; and (2) the nature of the process by which the fibrin is produced. The mode of obtaining the fibrino-plastic substance (globulin, or blood-casein) has been previously mentioned; the fibrino-genic substance Schmidt obtained in a similar way, by precipitating coagulable fluids with CO_2 , or weak acetic acid, and dissolving the precipitate again in weak alkali. The properties of the two substances he finds, so far as he has carried his inquiries, to be the same; they differ only in the more feeble reactions of the fibrino-genic than of the fibrino-plastic substance. Hence they are difficult to separate. The fibrino-genic substance shows a greater tendency to aggregate into masses. Both substances lose their specific power of forming fibrin by heat, without undergoing any other change. A mixture of an artificial solution of each of them seldom coagulates, but an artificial solution of either will coagulate with a natural solution of the other. The fibrino-plastic substance is very widely distributed through the body, being yielded by almost all the tissues; its origin is always from cells.

With regard to the chemistry of the act of coagulation, Schmidt holds that it is the result of a true union of the fibrino-plastic and fibrino-genic substances with each other, forming an insoluble third substance, which is the ordinary fibrin. In this process alkali would be set free, and Schmidt has found the serum remaining after coagulation always richer in alkali than the fluid was before it took place. This alkali retains in solution a certain portion of the fibrino-plastic substance (the more soluble of the two), and thus a fluid in which coagulation has taken place will coagulate again on the addition of a liquid containing the fibrino-genic substance. These two factors may unite in any proportion, the whole of the fibrino-genic substance being precipitated in every case of coagulation; the proportions in which they are united determine the rapidity of the process and the firmness of the clot. Salts hinder coagulation by virtue of their attraction for one or both of these factors in the process.

With regard to the origin of the fibrino-genic substance, Schmidt inclines to the opinion that it is fibrino-plastic substance which has undergone alteration, so that ultimately all the coagulable matter is derived from cells; and thus in cases in which the blood is thinner (as in inflammation and in pregnancy), the increase of fibrin might be explained on the principle simply of an increased exosmose.

On the question why the blood does not coagulate within the vessels, Schmidt ascribes to the living tissues (differing on this point from Lister) a power of resisting the union between the two factors of fibrine. Either there may be, after the withdrawal of the blood from the body, a continued exudation of fibrino-plastic substance from the cells, without an addition of alkali to maintain fluidity; or there may be during life an immediate change undergone by the fibrino-plastic substance on its emergence from the vessels, probably into the fibrino-genic substance, which change ceases when the influence of the tissues is withdrawn.

Lister adduces a long series of experiments which place the immediate occasion of the coagulation of the blood in a new light, especially interesting in its relation to pathology. His conclusions are, that coagulation is in no degree connected with the evolution of ammonia, any more than with the influence of oxygen or rest. The real cause of the coagulation of the blood, when shed from the body, is the influence exerted upon it by ordinary matter, the contact of which, for a very brief period, effects a change in the blood, inducing a mutual reaction between its solid and its fluid constituents, in which the corpuscles impart to the liquor sanguinis a disposition to coagulate. This reaction, he holds—agreeing in this with Schmidt—to be probably simply chemical in its nature; yet its product, the fibrin, when mixed with blood-corpuscles in the form of an undisturbed coagulum, resembles healthy living tissues, in being incapable of that catalytic action upon the blood which is effected by all ordinary solids, and also by the tissues themselves when deprived of their vital properties. The bearing of this fact upon inflammation is immediate. If we inquire what is the great peculiarity of inflamed parts in relation to the blood, as examined by the naked eye, we see that it consists in a tendency to induce coagulation in their vicinity, implying that the affected tissues have lost, for the time being, their vital properties, and comport themselves like ordinary solids. Thus, when an artery or vein is inflamed, coagulation occurs upon its interior, in spite of the current of blood, precisely as would take place if it had been artificially deprived of its vital properties. On one occasion Lister simulated the characteristic adherent clot of phlebitis by treating the jugular vein of a living sheep with caustic ammonia, and then allowing the circulation to go on through the vessel for a while, when, on slitting it up, its lining membrane was found studded with grains of pink fibrin, which could be detached only by scraping firmly with the edge of a knife. Again, comparing an inflammatory exudation into the pericardium or into the interstices of the cellular tissue with dropsical effusions into the same situations, we are struck with the fact that, while the liquor sanguinis effused in dropsy remains fluid, the inflammatory product coagulates. Now, we know that in intense inflammation, the capillaries are choked, more or less, with accumulated blood-corpuscles, which must cause great increase in the pressure of the blood upon their walls; and from what we know of the effect of venous obstruction in causing dropsical effusions of liquor sanguinis through increased pressure, we are sure that we have in the inflammatory state the physical conditions for a similar transudation of fluid through the walls of the capillaries. And the natural interpretation of the difference in the two cases, as regards coagulation, seems to be that, whereas in dropsy the fluid is forced through the pores of healthy vessels, in inflammation the capillary parietes have lost their healthy condition, and act like ordinary matter; so that the liquor sanguinis, having been subjected immediately before effusion to the combined influence of the injured tissue and the blood-corpuscles, has acquired a disposition to coagulate, just like the buffy coat of horse's blood shed into a glass, or like the frog's liquor sanguinis filtered by Miller from its corpuscles, the injured vessels acting upon

the blood like the filter. The results of his recent investigations thus entirely confirm the views of inflammation to which he was led by his previous studies (see the 'Philosophical Transactions,' 1858).

Lister does not find that the healthy vessels or other tissues exert a positively restraining power over a spontaneous tendency to coagulation naturally existing in the blood, but holds that they are simply negative in this respect, and that unliving matter exerts a disturbing—as it were, a catalytic—influence, which induces coagulation.

The test used by Thiry, to determine the ammonia in the fluids, was that recommended by Nessler—a solution of iodide of mercury in iodide of potassium, rendered strongly alkaline by potash. He employed also hæmatoxylin paper to confirm his results. The blood was conveyed, without access to the air, beneath an exhausted receiver, and afterwards atmospheric air, previously passed over SO_3 , was driven through it. No ammonia was given off from the blood at the temperature of the body; it was given off, however, when the blood was heated to 50°C . (122°Fahr .), and more abundantly at 70° (158°Fahr .) There is no difference between arterial and venous blood, nor does that of the portal vein contain any excess. Coagulation took place, without any escape of ammonia, in blood from which ammonia was afterwards obtained by heat. The form in which ammonia exists in the blood is probably that of the lactate, a solution of this salt alone among the salts of ammonia giving similar results. In the urine ammonia exists in a similar form. In mammalia the expired air is richer in ammonia than the inspired; in frogs this is not the case.

Observing that the composition of fibrin differed from that of albumen by the substitution of 1.5 part of oxygen per 100 for a similar amount of carbon, nitrogen, hydrogen, sulphur, and phosphorus conjoined, Smeë passed a current of O through various albuminous fluids, to ascertain whether fibrin could be thus produced from them. His conclusions are—(1) fibrin is produced by the direct action of oxygen on albumen; (2) the alkalies and alkaline salts prevent the appearance of fibrin when albumen is acted upon by oxygen; (3) the formation of fibrin from albumen is accompanied by the evolution of sulphur, phosphorus, and carbonic acid; (4) a temperature ranging between 98° and 110°Fahr . promotes the artificial formation of fibrin; (5) the greatest amount of fibrin appears when the albumen is neutral, or slightly acid; (6) the viscosity of the material employed promotes the formation of fibrin; (7) albumen artificially digested in gastric juice produces fibrin by its subsequent oxidation, even after dialysis; (8) gluten dissolved in gastric juice, and then oxidized at the ordinary temperature, yields fibrin.

Panum has repeated and carried farther the often tried experiments on transfusion. The results he has arrived at, so far as they bear on physiology, are chiefly the following:—(1) The defibrination of the blood, even when all the natural blood of the animal is replaced by defibrinated blood from another of the same kind, brings no notable

disturbance to pass. (2) The removal of the chief part of the fibrin has no perceptible influence on the secretion of urea. The fibrin, therefore, is not the source of urea. (3) Within forty-eight hours of the removal of the greater part of the fibrin from the blood, it is present again in normal quantity, or in excess if inflammation have arisen. This is equally the case when the blood of an animal has been almost entirely replaced by the whipped blood of another of the same kind. (4) The fact that defibrinated blood may take the place of ordinary blood, in respect to all the functions of the body, favours the idea that fibrin is only a secondary product of cell formation and nutrition, and not the material from which the tissues are formed. (5) The substituted defibrinated blood, provided the animals be of the same kind, maintains its vitality and constitution as long as the natural blood; the corpuscles undergo no special variations in amount, and the secretions exhibit no disturbance. (6) The blood of the ruminants will temporarily restore the functions of life in an anæmiated dog; but it soon decomposes and is cast off through the kidneys and bowels, and in the form of internal exudations. (7) Among the products of the decomposition of the blood of the ruminant in the vessels of carnivorous animal urea is not included; the secretion of urea, indeed, is altogether suppressed. Thus Bischoff's view, that urea is formed from the tissues, and not directly from the blood, receives support.

IV. DIGESTION.

THIRY, L., and MEISSNER, G.—*Researches on the Digestion of Albuminous Substances*. Nos. 5 and 6. *Zeitschrift für Rationelle Medicin*, vol. xiv, pp. 78 and 303.

SCHIFF, M.—*Preliminary Contributions to the Physiology of the Pancreas, the Spleen, and the Stomach*. *Archiv für Heilkunde*, iii, p. 271.

SCHIFF, M.—*On the Function of the Spleen*. *Schweizerische Zeitschrift für Heilkunde*, vol. i, p. 201.

PAVY, F. W.—*On the Immunity enjoyed by the Stomach from being digested by its own Secretion during Life*. *Philos. Trans.*, 1863, p. 161.

Thiry's experiments are in continuation of Meissner and Büttner's, reported in the 'Year-book' for 1862, p. 5. He confirms the statement that albumen, on digestion with artificial gastric juice, is split into parapeptone, which is insoluble in water, and into certain bodies soluble in water; also that the metapeptone of albumen, like that of fibrin, is only a transient product of the splitting, and on continued digestion passes into peptone, towards which it is a step. In reference to the three forms of peptone yielded by fibrine, Thiry found that the solution of albumen yielded none of the so-called *a* peptone, but that it always contained *b* peptone and *c* peptone. He further confirms that the same changes which are effected in albumen by digestion with hydrochloric acid and pepsine are produced also, but in a longer time, by boiling in water; the metapeptone, however, is not converted into peptone. Alkalies oppose the effect of boiling.

The ultimate analysis of albumen, peptone, and parapeptone, shows that the elements are essentially unaltered, and that the difference is one of molecular arrangement.

Meissner and De Bary found that vegetable albuminous substances (from rye, wheat, and peas) gave the same results on artificial digestion or boiling with water as animal albumen, viz., parapeptone and two peptones.

Parapeptone, by continued digestion or boiling, becomes less and less soluble, so that after a time it is precipitated even from the 2% solution of HCl. This change, however, takes place with some kinds sooner than with others, and is especially rapid in that derived from casein and from the fibrin of blood, which is insoluble in the said solution immediately on its production by the usual period of artificial digestion. To this form of parapeptone it is that the name of dyspeptone was given, which accordingly is not a special substance, but is only parapeptone that has become less soluble.

Schiff has submitted the fact that an infusion of the pancreas does not digest albumen during fasting to further examination. He found that to the charging of the pancreas with the necessary ferment for the digestion of albumen, two conditions are necessary—the presence of the so-called peptogene in the blood, and the act of absorption in the stomach. These two conditions are united when peptogenic substances are absorbed from the stomach, but they can be separated from each other; *e. g.*, by injecting peptogene into the veins, and by causing non-albuminous bodies to be absorbed by the stomach. In this latter case it was found that the absorption of fat by the stomach was much more effective than that of soluble starch. In general, those substances which, when absorbed by the stomach, acted least on the pancreas, were those which are chiefly taken up by the blood-vessels; those which are taken up chiefly by the lymph-vessels acted most.

Since the act of absorption by the absorbents of the stomach is essential to the production of the digestive ferment in the pancreas, Schiff concludes that it must occasion an alteration in the gland itself, in a reflex manner; and, in fact, he observed that, after extirpation of the solar plexus or destruction of its connections with the spinal cord, the charging of the pancreas was absolutely prevented. This reflex change in the pancreas, Schiff believes, consists in the active dilatation of its vessels (see 'Year-book,' 1861, pp. 87, 88), by which a path is opened to the blood through portions of the gland-tissue otherwise inaccessible, so that it comes into contact with special elements which before it did not reach. Schiff has seen the vessels of the pancreas apparently more numerous and penetrating in a digesting than in a fasting dog, and the secretion more abundant when the stomach absorbed without digesting.

But the charging of the pancreas, according to Corvisart's and Schiff's observations, begins only in the fourth hour of digestion, while the vascular dilatation reaches its maximum in the second or even the first hour. Nor does the injection of more peptogene into the blood-vessels during the first hour of digestion hasten the charging. A third condition, therefore, is necessary, and Schiff finds it in an action exerted on

the peptogene through the spleen, which he has previously found reason to think exerts an action of this kind. As confirmatory of this view, he refers to the fact that the spleen undergoes a turgescence during digestion, which reaches its maximum about the fifth hour—the same at which the charging of the pancreas also is greatest. Experiments were instituted in which the spleen was extirpated, or its vessels tied, and, according to expectation, it was found that the infusion of the pancreas exhibited no power of digesting albumen, while that of the stomach was increased two or threefold. This latter fact was expected also, since the stomach can be charged with unaltered peptogene, and this, after extirpation of the spleen, accumulates more largely in the blood. These experiments were performed on dogs and cats, the pylorus and sometimes the œsophagus being also tied. Parallel experiments were performed, in which every step was the same, except the removal of the spleen or ligature of its vessels. In a cat, after ligature of the splenic vessels and pylorus, dextrin and artificially digested albumen were injected into the stomach. After six hours, the infusion of the stomach digested the enormous amount of eleven and a half whites of eggs; that of the pancreas none. In some cases in which the spleen, though not tied nor removed, yet did not become turgid, the pancreas was not charged, and the same result followed the abolition of its function by painting it with ammonia. Also, when the splenic vessels are tied, no digestion of albumen takes place in the duodenum of dogs, a ligature being placed on the pylorus. Experiments with vegetable feeders yielded the same results.

As by removal of the spleen the abolished digestive function of the pancreas is laid upon the stomach, so in removal, injury, or disease of the pancreas, the stomach also takes on a compensatory action, becoming more strongly charged with peptogene. So loss of function of the pancreas is innocuous in respect of nutrition, for the same reason that removal of the spleen is so.

The use of the pancreas in respect to the digestion of albuminous substances lies in the fact that the gastric juice never completely resolves these substances into soluble absorbable forms, but always with the peptones produces also parapeptone, which requires further change before it can be used for nutrition. This change, as Meissner has shown, the pancreatic juice effects. When the pancreas cannot act, as after removal of the spleen, the parapeptone is unused, and more peptone is needed to supply its place. Thus is sufficiently explained the increased appetite so often observed after removal of the spleen, the degree of which depends upon the extent to which the albumen of the food is capable of being converted into peptones by the stomach. On a flesh diet the increase of appetite is greater than on a vegetable diet. In this connection, a case reported by Adelman, in the 'Deutsche Klinik' for 1856 is interesting. A woman, aged 22, suffered in consequence of an injury from a hernia of the spleen, for which the organ was removed. In thirty days she left the hospital in perfect health, and so remained, but her appetite was enormous.

The absorption of fat, Schiff thinks, is increased after removal of the spleen, because, owing to the greater digestive activity of the stomach,

the fat-formers are more isolated in the intestines, and the pancreatic juice, digesting no albuminates, is concentrated upon them alone.

Pavy has proved the insufficiency of the view that the protection of the living stomach from digestion is due to the perpetual renewal of the epithelium, by dissecting off a portion of the mucous membrane, and showing that digestion of the exposed portion does not ensue. He proposes, instead, the doctrine that the acid of the gastric juice is neutralized by the alkaline blood circulating in the vessels of the part. Numerous experiments are adduced; among others, a portion of the living stomach was surrounded by a ligature, digestion was suffered to go on, and it was found that the ligatured portion was digested, the remainder of the organ escaping. The digestion of portions of living animals, and the presence of entozoa within the stomach, are shown to be not incompatible with the view suggested.

V. LYMPHATIC SYSTEM.

VON RECKLINGHAUSEN, F.—*On the Absorption of Fat.* Virchow's Archiv, vol. xxvi, p. 172.

TOMSA, W.—*On the part taken by the Origins of the Lymphatic Vessels in Nutrition and Inflammation.* Casopis lek cesk, 7, 8, 9. Vierteljahrsschrift für die Prak. Heilkunde, vol. iii, Analekten, p. 2.

On injecting blood, or milk, or a solution of sugar coloured with cinabar, Indian ink, or cobalt, into the peritoneum of rabbits, v. Recklinghausen found, that while the lymphatics of all other parts remained unaltered, those of the tendinous centre of the diaphragm became distended, and exhibited fat-globules, blood-corpuscles, or particles of colouring matter, according to the fluid used. He found also that he could produce the same result on portions of the tendinous centre which he removed, with precautions to secure their natural tension. He succeeded also in detecting the details of the process beneath the microscope. At certain points of the lymphatic vessels in this region there were formed 'whirlpools,' to which all the corpuscles of milk placed in contact with the membrane were rapidly attracted, and after passing through them reappeared within the vessels. By means of a solution of silver, dark spots were produced in the region of these whirlpools, which spots v. Recklinghausen considers to indicate the presence of openings in the walls of the lymphatics. These openings are twice the size of the blood-corpuscles, and as large as the largest globules of milk. These lymphatics, therefore, in the rabbit, communicate by open mouths with the cavity of the peritoneum. The purpose of this communication, in v. Recklinghausen's view, is to effect the absorption of the peritoneal fluid, which, like that of all the large cavities, contains corpuscles similar to those of lymph. Openings in the lymphatic vessels of the pleura and pericardium, however, were not detected.

On examining the forces by which this motion of fluids into the lymphatics is effected, v. Recklinghausen found that it was indepen-

dent of pressure on the peritoneal surface of the diaphragm, and would take place even when it had to overcome the weight of a thin layer of fluid; that it took place equally when all the veins around the termination of the thoracic duct were tied, and when all traction on the part of the lungs was cut off. The process, therefore, is due fundamentally, not to any agency external to the lymphatic system, but to the relation of the lymphatic vessels and their contents to the absorbed fluid. It cannot, however, be classed either with the phenomena of endosmose or those of capillary attraction, and resembles most nearly the phenomena of substitution of fluids in capillary tubes discussed by Brücke.

If pressure is not the agent of absorption in this case, it is probably not concerned, as suggested, in absorption within the intestinal villi.

Tomsa affirms that the lymphatic system originates in a series of lacunæ in the connective tissue, the walls of which are formed only by this tissue, and which communicate with the perfectly formed lymphatic vessels, either directly or through a system of lymph 'tubes,' which are small canals without proper walls, and bounded only by denser layers of the connective tissue. These may be separated by pressure of fluid, and the lymph-tubes then lose themselves in the lacunæ. The lacunæ are not formed from cells, but are simply the interspaces left in the formation of the bundles and fibrils of the connective tissue. The secretion of lymph is determined by the difference of pressure within and without the blood-vessels, and is radically a process of filtration, with the characters of which it agrees. It can be produced in its normal characters after death. Increased pressure causes the exudation of more organic constituents; diminished pressure, of fewer, but with an increase in the quantity of salts. The expanded roots of the lymph-vessels are nutritive reservoirs, rather than mere absorbents; they are media between the supplying capillaries and the consuming and elaborating cells. The lacunæ surround the capillaries so as to form a kind of partitioned sheath around them. Tomsa thinks these facts have a bearing on the idea that should be entertained of nutrition and of inflammation, and that Virchow's doctrine, which ascribes to the cell all the active influence in these processes, is too exclusive. The blood and the fluid effused from it into the lymph-lacunæ, should rather be regarded as the starting-point, and from the latter may come the influences which determine the activity of the cells. In the chain of nutrition, Tomsa places first the blood and lymph-corpuscles, then the cells of the parenchyma, and again concludes with the lymph-corpuscles. The cells exercise a secondary influence upon the contents of the lymph-lacunæ, and may, *e. g.*, produce in them an increase of fibrinogenous material, which, however, only becomes true fibrin by entering the vessels and coming into contact with the blood-corpuscles. An increased pressure within the capillaries, continued until the phenomena of *stasis* result, has for consequence the filling of the lymph-lacunæ with contents entirely differing from the ordinary lymph. The experiments were made on the testicle of the dog, by constriction of the veins. The interspaces of the connective tissue became distended with fluid, which in some cases excited new cell formation; but only when the blood

became stagnant in the capillaries, and the corpuscles adhered to the walls of the vessels and to each other. These distended lacunæ, becoming dark and granular, are what Virchow has called the connective-tissue-corpuscles, and they really bear a very different signification from that which he has assigned them. In parenchymatous inflammation the lacunæ are passive, and become filled by the increased cell growth.

VI. BILE, AND FUNCTIONS OF THE LIVER.

BETZ, W.—*On the Blood-stream in the Liver, especially in the Hepatic Artery.* Henle und Pfeufer's Zeitschrift, vol. xviii, p. 44.

HOPPE SEYLER, F.—*On the Destination of Bile in the Intestine.* Virchow's Archiv, vol. xxvi, p. 519.

RÖHRIG, A.—*On the Influence of the Bile upon the Action of the Heart.* Archiv für Heilkunde, August, 1863, p. 385.

Betz sought to determine the manner of the circulation within the liver by means of currents of gum-water driven through the hepatic artery and portal vein of a liver, placed as nearly as possible in its natural position. He found that—(1) Under the same pressure more than twice as much blood passed through the portal vein as through the artery, after allowing for the difference of calibre, *i. e.* the resistance to the hepatic is greater than to the portal circulation. On an average, the diameter of the branches of the portal vein is five times that of the corresponding artery. (2) Blood passed more readily through the hepatic artery when less passed through the vein. (3) Pressure on the gall-ducts hindered the flow through the vein. (4) As far as could be judged, filling of the liver-cells had the same effect. (5) Increased pressure *around* the liver also diminished the flow through the vein. (6) On forcing fluid through the portal vein in either direction, none escaped from the hepatic artery. (7) On forcing it through the hepatic artery, more escaped from the portal than from the hepatic vein. (8) Tying the hepatic artery (above the origin of the pancreatico-duodenalis) caused fatty degeneration of the liver, but did not arrest the secretion of bile. The experiment was not, however, continued beyond forty-eight hours.

The fæces of the dog, according to Hoppe Seyler, contain no substance representing the biliary acids except cholalic acid, and this, together with cholesterine and pigment, are the only substances derived from the bile which are found in the fæces. The cholalic acid is derived from tauro- and glyco-cholic acid by a spontaneous decomposition out of the body, and it appears that the process is the same within the bowel; for neither the pancreatic nor the intestinal secretion seems to expedite it. The change begins in the small intestine, but is chiefly effected in the colon. Only half the quantity of the secreted biliary acid is represented in the fæces evacuated (in the dog), but Hoppe Seyler has not as yet been able to find any evidence of its reabsorption.

The frequently noticed slowness of the pulse in jaundice induced Röhrig to put to the test the effect of bile upon the heart, by injecting it

into the veins. His conclusions are—(1) The retardation of the pulse in jaundice arises from the presence of bile in the blood. (2) The bile owes this property to the glycocholate and taurocholate, that is, to the cholate of soda, which it contains. (3) The retardation is effected by a specific paralyzing action of the bile-salts upon the ganglionic system of the heart. (4) How the bile-salts affect the ganglia is undetermined. (5) The paralyzing influence of the cholate of soda upon the motion of the heart is exhibited also upon the activity of the lymphatic hearts. (6) With the retardation of the pulse after injection of the bile-salts a notable diminution of temperature is to be observed (& collapse). (7) The use of bile as a febrifuge may therefore be suggested. (8) The bile-acids can be taken up by the kidneys; under normal relations, however, they are not taken up, or in very small quantity. (9) The decomposition of the bile-acids in the blood is more probable than their elimination. (10) The vagus nerves have a compensatory action in respect to the various states of excitement of the ganglia of the heart. (The retardation of the pulse was diminished by their section.)

VII. CIRCULATION AND RESPIRATION.

- V. BEZOLD, A.—*On a New Motor Nervous System of the Heart.* Berlin Med. Central Zeitung, No. 67. Wiener Med. Wochenschrift, Dec. 20th, 1862.
- GOLTZ, F.—*The Vagus Nerve and the Heart.* Virchow's Archiv, vol. xxvi, p. 1.
- REISET, J.—*Chemical Researches on the Respiration of the Animals of a Farm.* Comptes Rendus, April 20th, 1863, p. 740.
- SACHS, J.—*A Contribution to the Question as to the Place of Formation of Carbonic Acid in the Organism.* Reichert und Du Bois Reymond's Archiv, 1863, No. 3, p. 345.

Bezold has previously confirmed the statement, that in the sympathetic nerve of the neck fibres are contained, by the irritation of which quickening of the heart's motion and an increase of the blood-pressure in the arteries are produced within certain limits. In the course of these researches he has found a new path taken by the motor nerves of the heart, which establishes a still more important and intimate connection of the heart with the cerebro-spinal system than either the sympathetic or the pneumogastrics.

The main results of the experiments carried out on rabbits completely paralysed by weak doses of woorara are the following:—(1) In animals in which the vagi and the sympathetic in the neck are divided, irritation of the medulla oblongata produces a very considerable acceleration of the pulse, and a great increase of the arterial pressure—in many cases to more than double. (2) On section of the spinal cord in any spot above the seventh cervical vertebra there at once appear all the indications of a very diminished action of the heart; sinking of the pressure in the carotid to three quarters its former height, &c.; the heart's sounds become almost inaudible. On the other hand, no alteration en-

sues when the cord is divided about the third or fourth dorsal vertebra.

(3) On irritating the upper segment of the cord thus divided in the neck, no increase in the pulse is produced; on irritating the lower segment the diminished action of the heart is again raised to or above its normal amount. The nerves in question, therefore, leave the spinal cord between the seventh cervical and the fourth dorsal vertebrae.

(4) If, in animals weakly poisoned as above described, both the medulla oblongata and the peripheral portions of the divided vagi are irritated, there is produced a diminution of the blood-pressure, and retardation or ceasing of the pulse. The influence of the cord, therefore, is controlled by that of the vagi. Bezold believes that there is thus established the existence of a new central organ for the heart's motions, situated either in the medulla oblongata or in the brain, and that the nerves from it, passing through the lower cervical and first dorsal ganglia, reach the heart as the middle and inferior cardiac nerves. This central organ produces, according to him, three fourths of all the impelling force of the heart, and by its abnormal excitement its contractions may be raised to sixfold the power which they possess through innervation by the cardiac ganglia alone. It stands in reflex connection with the sensitive cerebro-spinal fibres, and through it come to pass all quickening and strengthening of the pulsation which is produced by pain, or terror, or other psychical influences. Various poisons, especially digitalis and strychnine, the vagi being divided, increase and strengthen the heart-beat by stimulating this system to increased activity.

The first part of Goltz's paper consists of a proof that the vagi are the only sensitive nerves of the heart. If the apex of the exposed heart of a frog is drawn forward, a small band, containing a vein, which forms a sort of bridge between the two surfaces of the pericardium, cut through, and acetic acid applied to the posterior surface of the heart at the spot at which the venæ cavæ enter the sinus, a strong contraction of the whole body of the animal takes place. This result always occurs. The section of one pneumogastric nerve diminishes it, the section of both prevents it. If, by the irritation of one pneumogastric, the heart is brought to a standstill, a reflex motion of the limbs is still produced, in the way above described, through the other. A frog was poisoned with woorara, one hind limb having been previously separated from the body except by the sciatic nerve; on applying the acetic acid to the sinus, the detached limb only was convulsed. Thus, the sensibility of the heart is maintained when the motor nerves are paralysed by the poison, as C. Bernard and Kolliker have shown is the case in respect to the sensitive nerves of the skin. In a new-born kitten, pinching the auricle produced reflex movements of the limbs after the vagi were divided; this one experiment, therefore, would indicate that in mammalia the heart possesses other sensitive nerves besides the vagi.

Goltz examined also the reflex paralysis of the heart from irritation of the sensitive nerves. Various kinds of irritation, especially throwing the creature on the ground, have been noticed to produce stoppage of the heart in the frog, and the result has been generally

ascribed to the direct shock. Goltz found that in certain water-frogs he could temporarily stop the heart by quickly tapping the abdomen, as, *e.g.*, by a rapidly revolving spatula. The stoppage was diastolic, precisely like that produced by irritation of the vagi; it could be prevented by destroying the central origin of the vagi, or by tying both of them. That the effect was not due to direct shock was proved by its not occurring if the tapping was applied to the head or spine; it was produced with extreme readiness by tapping the exposed stomach or bowels. In the latter way the respiration also may be speedily stopped, and the frog reduced to a state of apparent death, in which condition no reflex movements can be excited by irritation of the heart. By irritation of the nerves of the viscera the same effects could not be constantly produced. Acetic acid or hot iron applied to the extremities produced stopping of the heart, but through the blood, and not reflexly. The bearing of these facts on pathology is manifest. In reference to the effect of throwing a frog on the ground, the stoppage is systolic (tetanus) if it be done with violence; diastolic, with relaxation of all the muscles, if more gently: the result is the same when the brain and cord are destroyed.

With reference to the checking function of the vagi on the heart, Goltz urges—against Brown-Séquard's idea, that they act by contracting its nutritive vessels—that in the venæ cavæ and sinus of the frog's heart no such contractile vessels are to be found, and yet these are the most important parts in reference to its contraction, and their motion is at once checked by irritation of the vagus. The sensitive fibres, and those by which the checking function is exercised, are not the same; woorara paralyses the latter, and not the former. Goltz is of opinion that through the vagi an influence is exerted on the ganglia of the heart, like that of concussion in respect to the brain and cord. Having tied a ligature around the auricles in a frog until the ventricles came to a standstill, he then cut the ligature again. The ventricles remained at rest, choked with blood; the auricles continued pulsating. He then violently galvanized the medulla oblongata; the ventricles began again to contract, the auricles stood still. This result he ascribes to a paralysis of the vagi in respect to the ventricles, from the effect of the ligature.

Reiset's experiments were made with a view to agricultural rather than to physiological results. The animals—calves, sheep, pigs, turkeys and geese—were enclosed in an apparatus to which fresh oxygen was gradually supplied, the CO_2 being withdrawn by means of a solution of potash; the air was kept in constant motion. With sheep and calves, the general results were the same. From 86 to 99.4 per cent. of the oxygen consumed was given off in the form of CO_2 ; there was an exhalation of nitrogen, and of proto-carburet of hydrogen. From 9 to 17 grammes of carbon (from 140 to 260 grains) were burnt in the hour. With pigs, the results were very different; little or no nitrogen was exhaled; a boar of eight months absorbed a demi-litre. Scarcely any carburetted hydrogen was produced; in one case, 8 litres of free hydrogen (14.08 pints) were given off. For 100 parts of O

consumed, 82 to 85 parts were given off in CO_2 ; in one case there was an excess of CO_2 , which contained 509 grammes (17 pounds) of oxygen, in place of 483 (16.03 pounds) consumed. The turkeys and geese confirmed the results previously obtained with fowls. There is an exhalation of nitrogen, but none of hydrogen: 77.7 per cent. of the O consumed is given off in the CO_2 ; for fowls, the mean was 92 per cent.

The following table exhibits the normal respiration of a sheep, and its respiration when suffering under an attack of *meteorization*. The excess of carburetted hydrogen is ascribed to the formation of that gas in the stomach:

	Healthy.	Diseased.
Oxygen consumed	365.615 grmm. [11.7 oz.]	478.088 grmm. [15.6 oz.]
CO_2 produced	502.721 " [16.2 "]	661.875 " [20.3 "]
Nitrogen exhaled	7.514 " [2 drs.]	41.880 " [1.4 "]
Protocarburet of hydrogen exhaled	10.744 litres [18 pints]	21.923 litres [37 pints]
Carbon burnt per hour	9.840 grmm. [2.5 drs.]	12.092 grmm. [3 drms.]
Relation between the weight of the nitrogen exhaled and that of the oxygen consumed	0.0205	0.0876
Duration of the experiment . . .	13 h. 56 m.	14 h. 12 m.

The object of Sczelkow's researches was to establish the relation between the consumed oxygen and various processes of oxidation, in their dependence upon muscular activity. Three series of observations were made—(1) to determine the modification the total interchange of gases in the body undergoes, through the interruption or diminution of the stream of blood in a given mass of muscle; (2) to examine the changes which take place in the gases of the blood supplied to the muscles; (3) to compare the total interchange of gases in the body during rest with the same during muscular activity.

The first series of experiments were made on rabbits; the abdominal aorta was compressed, the absorption of O and exhalation of CO_2 being examined before and after. The results were indecisive; neither the amount of the CO_2 nor of the O, nor the relation of the two, was affected in a constant manner, and this independently of the quietude or restlessness of the animal, although this latter had in one case a marked effect in increasing the exhalation of CO_2 .

In the second series of experiments blood taken from the vena profunda femoris in dogs, both while the limb was at rest and after it had been thrown into contraction, was compared in respect to its gaseous contents with blood from the carotid artery. The following results were obtained:—(1) The colour of the venous blood was in some cases brighter, in some darker, after contraction than before. In one case, though brighter, it contained less oxygen. (2) In the muscle, while at rest, there goes on a rapid formation of CO_2 , the venous blood containing, on an average, 6.71 per cent. more than the arterial. After contraction this average is increased to 10.79 per cent.; and the increase is the more considerable, inasmuch as the circulation is also quickened. (3) The oxygen in the venous blood, when the muscle is at rest, is 9 per cent. less than in arterial; after contraction it sinks

from 1 to 8 per cent. more; the amount of oxygen present may be as low as 1 or 2 per cent.; allowing for the quickened circulation, this shows the consumption of oxygen to be very great. (4) The increase of CO_2 was greater in proportion than the consumption of O.

The third series of experiments was designed to put this last fact to the test. Dogs and rabbits were confined in an apparatus by which the gases given off by them in respiration were collected, and these were analysed, first during rest, and again after the hinder limbs had been tetanized. The result showed that during contraction more CO_2 was given off in proportion to the O consumed than during rest. The increase of CO_2 was from 82 to 180.5 per cent.; of O, less than 50 per cent., except in one instance, when it was 73.7. This disproportion could not arise merely from the giving off of CO_2 previously contained in the blood; the amount was much too great; nor, for the same reason, could it be ascribed to a using up of the previously existing free O. It follows, that in contracting muscles other decompositions take place than in muscles at rest. Two explanations are possible—either, in contraction, substances are burnt which are very rich in oxygen, as, for example, the formic and acetic acid shown to exist in muscles by Scherer; or, CO_2 is formed in other ways, without the aid of the inspired O, by the consumption of O, which enters into the constitution of the organic atoms.

To put to the test the question whether CO_2 is formed in the tissues or in the blood, Sachs took two portions of blood from the carotid artery of the dog, and examined the gas-contents of one immediately, and of the other at intervals of twelve, twenty-four, and forty-eight hours. These experiments were made at the temperature of the air. The result was that in the course of forty-eight hours the oxygen almost disappeared, and its place was taken by CO_2 in slight excess. The amount of chemically united CO_2 was slightly increased. No further change took place in seventy-two hours. Sachs confirms Meyer's statement, that if blood is defibrinated, no CO_2 is formed in it. The following table exhibits the result of one experiment.

	In 100 vol. of fresh blood.	In 100 vol. of blood after forty-eight hours.	Difference.
Free gas	44.722	44.114	— 0.608
Free CO_2	29.592	42.104	+ 12.512
„ O	13.677	1.029	— 12.648
„ N	1.453	0.981	— 0.472
Chemically combined CO_2	3.907	5.499	+ 1.592

These changes are almost identical with those found by Setschenow in the blood of suffocated animals, but they take place more slowly. To determine whether the greater rapidity of the formation of CO_2 in suffocation was due to the higher temperature, or to the blood being in contact with the tissues, a portion of blood was kept for six hours at the temperature of the animal body. The gas-contents exhibited scarcely any change; the same result was found on keeping blood for forty-eight hours at zero.

OVERBECK, R.—*On the Albuminous Urine which follows interruption of the Blood-stream.* Wiener Sitzungsberichte, vol. xlvii, p. 189.

Hermann's experiment on temporary compression of the renal artery having shown that albuminuria was one of the most constant results (see 'Year-Book,' 1862, p. 26), Overbeck was induced to submit the subject to further investigation. Three questions were chiefly considered—(1) The extent to which the albuminuria might be thus induced. (2) The means by which the result was brought about; whether (as Hermann thought) purely through increased pressure on the capillaries, or through alteration also of the secreting membranes. (3) To compare the changes in the normal urinary constituents (urea, for example) with the appearance and variations of the albumen. To avoid modifications from injury to the renal nerves, the blood-stream was interrupted by compressing in some cases the renal arteries, in others the aorta; by introducing a bladder empty into the right side of the heart, and then inflating it; and finally, by producing transient suffocation. The experiments were made on dogs, which were mostly well fed on meat the previous evening. Overbeck's conclusions are the following:—(1) Albumen appears in the urine, not only after compression of the renal arteries, but also after inflation of the heart and attacks of suffocation. (2) The secretion of urine returns, not immediately on the restoration of the circulation, but after the lapse of from five to twenty-two or even forty-four minutes. (3) The amount of the urine is sometimes increased, sometimes diminished. (4) There is no fixed relation between the quantity of urine and the per-centage of albumen. (5) If the amount of urine sinks when the albumen appears, the absolute amount of urea diminishes in all cases, even when its per-centage increases; even if the urine increases, the absolute amount of urea diminishes, unless the urine rises to a multiple of the original quantity. (6) The process which introduces the flow of albumen checks the secretion of urea. (7) Between the per-centage of urea and albumen there exists no fixed relation. (8) Tying the ureter may entirely prevent the passage of albumen into the urine. (9) Narrowing of the renal artery seems also to diminish the amount of the albumen. (10) The albuminuria after interruption of the blood-stream seems to be due to a combination of several main conditions; probably an alteration of the membranes is not less concerned than an elevation of the blood-pressure. (11) The reaction of the albuminous urine is very variable, often changing rapidly; neutral or alkaline urine often at once becomes acid with the first appearance of albumen. (12) In albuminous urine, after interruption of the blood-stream, there are found epithelial cylinders, but no fibrinous coagula; the former do not appear immediately, but only after a prolonged continuance of the albuminuria. The flow of albumen, therefore, is not (as Willich holds) a consequence of the throwing off of the epithelium, but its cause. (13) Within the kidney-epithelium there exists the same kind of molecular motion that presents itself in the salivary, pus-, and blood-corpuscles. (14) The constitution of the kidney differs after long-continued albuminuria from that which is found after a short continuance. In the former case there exist *stases* of various extent,

SCOUTETTEN, M. H.—*Experiments proving the Electricity of the Blood in Living Animals.* Comptes Rendus, July 27th, and Nov. 9th, 1863.

Scoutetten's experiments were made on horses. The right carotid artery and left jugular vein being exposed, and a portion twelve centimètres (4·7 inch) long isolated by ligatures, a glass tube containing a folded sheet of platinum, with a guarded wire attached, was inserted into each, and the current of the blood re-established through them. Every precaution was taken to avoid error. When the respective platinum wires were connected with the galvanometer, the needle suffered a strong deviation; on two occasions it stood at 50° and 55° . The arterial blood was positive, that is, the current passed from the vein to the artery. In another experiment, blood was received at the same moment from the carotid artery and the jugular vein; the venous blood into a porous vessel surrounded by the arterial blood. The galvanometer exhibited a strong current from the former to the latter, as before. The deviation amounted to 75° , and even after coagulation it still stood at 70° . The author compares this result with that obtained by Gauguain in 1854, in respect to combustion—the current from the venous blood to the arterial corresponding to that from the carbon to the air. He infers a constant circulation of electricity throughout the most delicate network of the tissues, the arteries and veins being veritable porous vessels. On a later occasion the experiments were repeated with modifications adapted to avoid certain objections. The force of the current produced was found to equal 1·82, the electro-motor power of zinc being represented by 100, and that of a Daniell's cell by 58.

VIII.—MUSCULAR SYSTEM.

LEBER, T.—*On the Influence of the performance of Mechanical Work upon the Fatigue of Muscles.* Henle und Pfeufer's Zeitschrift, vol. xviii, p. 262.

RANKE, J.—*Researches on the Chemical Conditions of the Fatigue of Muscles.* Reichert und Du Bois Reymond's Archiv, No. 4, 1863, p. 422.

MEYERSTEIN, DR., and THIRY, L.—*On the Relation of the Heat produced by Muscular Contraction to the Work performed.* Henle und Pfeufer's Zeitschrift, vol. xx, p. 45.

Leber asserts, as the result of his experiments, that the resistance offered to the muscle during or at the beginning of its contraction exerts the chief influence in producing fatigue; that the influence of the performance of work is doubtful, but always subordinate, and that weighting the muscle during rest does not cause fatigue.

Some light may be thrown upon Leber's statements by the experiments of Ranke, who tested the access and duration of the apparent exhaustion of muscles under various conditions. He proved: (1) That, after permitting the escape of the blood from an exhausted muscle, its

irritability partially returned, and that on washing it out with a solution of $\frac{1}{2}$ per cent. of common salt the restoration was still more perfect. (2) That the presence of blood in itself does not diminish, but increases, the duration of contractility. It was probable, therefore, that the presence of the products of muscular decomposition in the blood prevented its contraction on stimulus. To put this idea to the test, he injected into the blood-vessels an infusion of the flesh of the animal, which would contain the elements resulting from such decomposition. The irritability of the affected muscles, however, was not diminished by this means, though by immersing them in the fluid they were rapidly rendered unexcitable. On removing the lymph from the lymphatics before injecting the infusion, a different result ensued; the contractility of the muscle was rapidly destroyed. The effect of the injection, therefore, is neutralized. This neutralization depends upon the alkalinity of the lymph, by which the acid of the infusion is neutralized, for a solution of lactic acid had the same effect as the infusion of flesh; and Ranke found that after thus destroying the irritability of a muscle it was partially restored by injecting a solution of the carbonate of soda, although the solution of carbonate of soda by itself diminished the irritability. After the irritability of a muscle had been destroyed by the infusion of flesh or lactic acid, it almost entirely recurred on the removal of the fluid. The completely fatigued muscle, accordingly, is not in a condition of exhaustion, strictly speaking. It possesses in itself still the conditions for the production of force, as, indeed, is evident when we consider the very slight changes which even the strongest tetanus can evoke; and to renew its excitability it suffices for a time to remove or neutralize its *débris*. Ranke's experiments were made chiefly on frogs, but the same results were given, though less strikingly, on rabbits. They are expressly confined to the muscles; the nerves having different relations.

Meyerstein and Thiry confirm Solger's statement, that generally the act of contraction of a muscle is accompanied by a diminution of its temperature; subsequently a rise of temperature sets in. They sought to test, by experiments on the gastrocnemius of a frog, and by the use of a very delicate thermo-electric apparatus, whether this rise of temperature is strictly proportional to the mechanical work effected by the contraction, and also whether it differed when the muscle exerted traction against a heavy weight without moving it, or lifted a lighter one. Their results are, that the development of heat is a genuine measure of the work performed, alike in either form of action. The cooling bears no relation to the subsequent heat; the former comes on immediately, while the latter requires time for its development, and may continue to increase for a few seconds after the muscle has returned to rest. The cooling was more considerable in weak muscles, and was often inversely related to the amount of the weight raised. The authors are of opinion that the sudden cooling is to be ascribed to an alteration of the muscle's specific capacity for heat, corresponding with the alteration of its molecular condition. The heat, on the other hand, corresponds to the chemical change within the muscle, and thus confirms the anticipation

that the amount of this change corresponds to the force exerted. The greatest amount of heat developed amounted to 0.37° C. (0.666 Fahr.).

IX. METAMORPHOSIS OF MATTER.

VOIT, C.—*On the Cycle of Nitrogen in the Animal Organism*. Sitzungsberichte der Königl. Acad. der Wissenschaften zu München, 1863, vol. i, p. 69.

SCHULTZEN, O.—*A Contribution to the Doctrine of the Metamorphosis of Matter during Inanition*. Reichert und Du Bois Reymond's Archiv, No. 1, 1863.

SPECK, C.—*Further Researches on the effect of Bodily Exertion upon the Human Organism*. Archiv für Wissenschaftliche Heilkunde, vi, p. 161. (Henle und Pfeufer, vol. xix, p. 389.)

SALISBURY, J. H.—*Experiments connected with the Discovery of Cholesteroline and Seroline as Secretions, in health, of the Salivary, Tear, Mammary and Sudorific Glands; of the Testis and Ovary; of the Kidneys in hepatic derangements; of Mucous Membranes when congested and inflamed; and in the Fluid of Ascites and in that of Spina Bifida*. Amer. Journal of the Med. Sciences, April, 1863, p. 289.

VAN DEEN, J.—*Preliminary Contributions on the production of Urea from Uric Acid by means of the Continuous Electric Current*. Archiv für die Holländische Beiträge, B. iii, Heft 2, p. 146.

——— *On the Changes which various bodies may undergo externally to the Animal Organism, but agreeing with those which take place in the Metamorphosis of Matter within it. Based on the Experiments of J. Van Deen*. Ib., iii, Heft 2, p. 225.

In consequence of the frequent contradictions given to the statement of Bischoff and Voit, that the whole of the nitrogen excreted is contained in the urine and fæces, and none in the perspiration and expired air, Voit, not content with recognising the sources of error in the methods by which those contradictory results were obtained, has put the matter anew to the test, choosing for the purpose a dove, that being the animal in which the asserted deficit of nitrogen in the urine and fæces was the greatest. It was fed for 124 days on peas, the nitrogen in which was accurately determined. They contained in 3132.4 grammes (7.2 lbs.), dried at 100° , 149.4 grammes (5.3 oz.) of nitrogen. The urine and fæces, accurately collected by a special apparatus, amounted to 976 grammes (2.2 lbs.), when dried at 100° , and contained 145.9 grammes (5.1 oz.) of nitrogen, that is, 2.3 per cent. less than the food. But the dove in the mean time had increased in weight 70 grammes (2.5 oz.); and this increase, considering the nature of the food, consisted, most probably, of albuminous matter, which would contain 2.4 grammes (37 grains) of nitrogen. Thus, in the urine, fæces, and increase of flesh, were contained 148.3 grammes of nitrogen, against 149.4 grammes in the peas consumed (a difference of 17 grains). The ashes of the food and excrement were also compared. The former yielded 94.6 grammes, the latter 94.7. By these numbers it is established that also in the dove in which Boussingault found a

deficit of 30 per cent. all the nitrogen is voided in the urine and feces. The total nitrogen-content of the dove's body amounted to about 14 grammes (216.07 grains); so that if only 0.11 gramme of nitrogen (1.7 grain) had been removed per diem by the respiration, nothing would have remained of it. The weight of the peas consumed was eight times greater than that of the dove, and the nitrogen in them ten times more than the dove contained.

A girl of nineteen years of age, and free from all other disease, suffered from stricture of the œsophagus, through drinking sulphuric acid, gradually increasing to perfect closure. She lived sixteen days without the introduction of any substance whatever into the stomach; and though nutritive matter, mixed with pepsine and with hydrochloric and lactic acid, was introduced regularly into the rectum, yet the absence of chlorine in the urine before death showed that none was absorbed. Even at the time of death the face was moderately full and the breasts well developed. On the eighth day before death the temperature began to fall, and it sank gradually to 35.7° C. (96° Fahr.). The mucous membrane of the stomach was of a deep-red colour at the pylorus, in other parts of a brownish hue, and in its whole extent greatly swollen. There was hepatization of the left lung. The liver cells were small, and several contained fat; the kidneys were wasted, and contained several fibrin-cylinders.

The chemical phenomena were chiefly the following :—The urine, examined two days before death, contained in twenty-four hours—urea, 6.6 grammes (99.85 grains); uric acid, 0.066 grammes (1 grain); hippuric acid, 1.16 (17.9 grains); phosphoric acid, 1.485 (22.5 grains); creatin moderately abundant; chlorine absent. It contained albumen. The muscles yielded leucin, a small quantity of uric acid, creatinin abundantly; creatin not to be detected.

The richness of the urine in hippuric acid was remarkable; it was more than double the ordinary amount in twenty-four hours (0.5 gm.), although the quantity of uric acid was diminished fivefold. This fact confirms Hallwach's statement, that hippuric acid is a product exclusively of the regressive metamorphosis of the tissues. The absence of creatin in the muscles may be referred to the want of water, the creatinin which was so largely present differing from it by the addition of $2\text{H}_2\text{O}$. The leucin may possibly have been a product of decomposition, although the quantity was very large, and the muscle was wholly free from smell.

Speck has carried out some new experiments upon young men in respect to the influence of exertion upon the excreta, &c. He found that bodily exertion occasions a decided decrease of weight, and increased the total waste and excretion; but after it, for a time, the body wastes less than otherwise in rest, and thus tends to equalise the loss. Thus, the increased waste during exertion may escape observation unless the weighing of the body is conducted correspondingly. During rest the increased use of water increases excretion, and leads to a diminution of weight; the contrary is the case during exertion—the bodily weight increases with the use of water, probably through its

supplying the place of the water that is lost. The quantity of urine diminishes for the most part to the amount of one third, owing probably to the increase of water-excretion of the lungs and skin. After the exertion is ended the perspiration sank to its mean, or below it. In respect to urea, Speck found in one series of observations no difference between rest and exertion; in another, a manifest diminution during exertion; in a third and fourth, a very slight diminution, followed by a slight increase when the exertion was ended; essentially, the urea remained the same during both periods. On the other hand, in three other series of observations, differing from the former by a less drinking of water and less perspiration, he found a decided increase of urea both during and after the exertion. On the whole, the urea was least when the perspiration was greatest, and Speck has noticed also during rest a diminution of urea accompanying free perspiration. No proof, however, is given of the presence of urea in the sweat.

According to all Speck's experiments, uric acid is increased during exertion, and this increase amounted, with the exception of one experiment when the diet was very poor in nitrogen, to more than that of any other constituent of the urine; for the most part, it was increased a third; once it was doubled, and once trebled. The other nitrogenous elements of the urine were not examined. The chloride of sodium was, on the whole, increased, but this was demonstrable in the urine only when its quantity was not diminished, and that of the sweat increased, beyond a certain point. With very profuse perspiration, the chloride of sodium in the urine might appear diminished. The sulphuric and phosphoric acids of the urine were always increased, and for a considerable period. The exhalation of carbonic acid from the lungs was greatly increased.

Speck lays stress upon the diminished waste after exertion, which is doubtless connected with the indisposition to repeat it; and which, if a considerable period be taken together of alternate rest and exertion, would seem to indicate no increase for exertion over rest. The waste is in the one case unequally, in the other equally, distributed. Considering the scanty increase of urea during exertion, while yet the loss of weight cannot be wholly referred to excretion of CO_2 and water, Speck thinks that the products of the decomposition of albumen leave the body in large quantity in other forms than that of urea.

Salisbury's experiments serve to carry further the investigations of Dr. Flint on cholesterine as an excretion of the liver. (See 'Year-book,' 1862, p. 8.) He gives the following as his conclusions:—(1) Cholesterine occurs largely in the ova of the human subject and of animals. (2) In the seminal fluid of the human subject, seroline (the stercorine of Flint) and cholesterine are largely present, the former more so than the latter. (3) Cholesterine occurs very largely as a secretion in the saliva; no seroline is found. (4) Neither seroline nor cholesterine occurs in healthy urine. (5) Cholesterine occurs quite largely, and seroline in small quantity, in jaundice-urine. (These bodies are probably always secreted by the kidneys whenever the liver, through organic or functional derangements, is unable to secrete them from the blood.)

(6) Cholesterine and colourless blood-discs are secreted or effused from highly congested and inflamed mucous surfaces. (7) Cholesterine is secreted or effused from the peritoneal (serous) membrane in ascites. (8) Cholesterine occurs largely in the fluid of spina bifida tumours. (9) Cholesterine is secreted by the tear-glands. (10) Human milk, previous to birth, is rich in cholesterine. No seroline detected in the experiment made. (11) After the birth of the child, and during nursing, the mammary glands secrete largely cholesterine and seroline. (13) Butter, beef, and hog suet, contain cholesterine and seroline. (14) The primary forms of the crystals of cholesterine appear to be the cube and rhombic prism, and that of seroline the very acute rhombic or rhomboidal prism, though usually appearing as simply acicular. (15) Cholesterine and seroline are largely secreted from the blood by the sudorific glands during the sweating stage of intermittent fever. These glands become important depurative organs in this disease. (16) The kidneys largely secrete cholesterine in intermittent fever. (17) The kidneys secrete cholesterine in varicella. (18) The kidneys secrete cholesterine in diphtheritic conditions. (19) The kidneys largely secrete cholesterine in the disease known as diabetes mellitus. (20) The kidneys secrete cholesterine and seroline in remittent fever. (21) The kidneys largely secrete cholesterine in typhoid fever. (22) Cholesterine is secreted by the sudorific glands in health.

Van Deen observes that, from the connection of the forces external to the body, we know that the chemical and physical changes going on within it must be constantly accompanied by electric disturbances, of the exact effects of which, however, we know but little. He has therefore tried to ascertain how far the chemical changes which animal bodies present can be effected directly by an electrical current, and has submitted various organic fluids to a continuous stream with that view. He now relates especially the result of his experiments on uric acid. A little uric acid (which is ascertained to be free from urea) is mixed up in a large quantity of water, so that a part is dissolved. The apparatus employed consists of two elements of Bunsen's pile, with platinum electrodes, which are immersed, being separated by a piece of glass, in the vessel containing the solution. In ten or fifteen minutes, even though the current has been weak, urea can be detected. If warm water be added, the action becomes more rapid and intense. The quantity of urea formed is in direct relation to the time during which the current has acted on the uric acid. If the current were continued for a sufficient length of time, he found distinct crystals of urea, the nature of which he confirmed by forming nitrate of urea. He believes that carbonic and oxalic acids are formed with the urea, but is not positive on this point, although he sometimes found crystals resembling those of oxalate of urea. The colour of the urine becomes darker, and its composition appears altered.

A report is also given of the general results of Van Deen's experiments. He has obtained by means of the continuous current—1. From *albumen*, cells resembling cytoïd corpuscles, a substance insoluble in water (fibrin?), urea, allantoin, and uric acid (very probably). 2.

From *mucus*, morphological elements, uric acid, and urea. 3. From *uric acid*, urea and allantoin. 4. From *glycin*, urea. 5. From *thein*, urea. 6. From *glycerine*, sugar and lactic acid. 7. From *inosite*, lactic acid. 8. From the *lactate*, *formiate*, *butyrate*, and *acetate of lime*, carbonate of lime and water. 9. From *tartrate of lime*, carbonate and oxalate of lime. 10. From *gum*, carbonate and oxalate of lime and water. 11. From *mannite*, sugar. 12. From *amygdalin*, sugar, hydrocyanic acid, and probably volatile oil of almonds. 13. From *tannic acid*, sugar and gallic acid. 14. From *salicin*, sugar and saligenin or saliretin. Electricity has no influence on starch, dextrin, glycogen, or sugar.

Van Deen has also subjected various substances to the action of ozone, with the following results:—1. From *uric acid*, urea and allantoin. 2. From *glycin*, urea. 3. From *glycerine*, sugar and, very probably, lactic acid. Ozone appears to have no influence on starch. Nitric acid and heat produce sugar from *starch*, the *corpora amylacea*, *mannite*, and *gum*. The fresh pancreas of a dog, whether the reaction was or was not acid, produced fatty acids, glycerine and sugar, from *butter*, and sugar from *glycerine*. At a temperature of 32° R. (104° Fabr.) calves' liver produced glycogen and sugar from glycerine, sugar from starch, and at the ordinary temperature sugar from dextrine. (See 'Year-book,' 1862.)

X.—NERVOUS SYSTEM.

BERNARD, C.—*Oculo-pupillary phenomena, produced by section of the Cervical Sympathetic, independent of the Vascular and Calorific Phenomena of the Head.* Journal de la Physiologie, t. 5, No. 19.

VIGOUROUX, R.—*On the Influence of the Movements of Respiration on those of the Iris.* Comptes Rendus, Sept. 28th, 1863.

PHILLIPPEAUX, J. M., and VULPIAN, A.—*Researches on the Reunion, end to end, of Sensitive Nervous Fibres with Motor ones.* Comptes Rendus, Jan. 5th, 1863, p. 54.

SETCHENOW, M.—*On the Moderators of Reflex Movement in the Brain of the Frog.* Comptes Rendus, Jan. 5th, 1863, p. 50.

In continuation of his previous experiments upon the vascular nerves, and their independence of the musculo-motor nerves (see 'Year-book' for 1862, p. 31), C. Bernard proceeds to show that in the effects produced by the section of the great sympathetic in the neck, namely, increase of heat, vascularity, and sensibility, contraction of the pupil, retraction of the globe, and flattening of the cornea, it is necessary to distinguish two orders of symptoms:—1st. Vascular and calorific effects, due to section of the sympathetic, and the same all over the body, and secondly, symptoms which he terms 'oculo-pupillary.' That these are respectively due to distinct nerves, he has obtained experimental proof.

In the dog, he finds that the division of the roots of the first and second dorsal nerves produces all the effects upon the eye that result from

division of the sympathetic, and that galvanizing the cut ends produces upon that organ the same effects as galvanism of the divided sympathetic; but that in both cases none of the vascular and calorific phenomena are exhibited.

On the other hand, by dividing subcutaneously the ascending filament of the sympathetic between the second and third dorsal vertebræ, there was produced, after a few seconds, a considerable increase of temperature, but without any of the ocular phenomena. After two days the difference of temperature on the two sides amounted to 5.8° C., (10.4 Fahr.) the eyes having precisely the same appearance.

Besides this anatomical distinctness, the two sets of nerves have different physiological properties, especially in respect to their reflex action. The reflex actions which are exhibited by the movements of the eye or pupil may have their source in any part of the sensitive nervous system. When a sensitive nerve is pinched, in any region of the body, there arises a reflex movement in both eyes at the same time, exhibited by a sudden enlargement of the eyelids and a dilatation of the pupil. This is effected through the spinal cord and the above-mentioned spinal nerves. If the roots of the first and second and sometimes the third dorsal nerves are divided on both sides, the action is wholly prevented; if on one side, it takes place only on that on which the nerves are left intact, on whichever side the irritation is applied. Thus the reflex action of the oculo-pupillary nerves is general and crossed.

On the other hand, the reflex operation of the vaso-motor nerves is not crossed, and is limited, as regards their excitation, to the particular region supplied by the nerve. An irritation of the auricular nerve produces vascularity only on the corresponding side, although this same irritation induces reflex movements in both eyes at once. From these differences between the oculo-pupillary and the vascular reflex actions, may we not infer that the former—those which are general—have their centre of reflection in the spinal cord, while the others, which are local and more circumscribed, have their centre in the sympathetic ganglia? Bernard is of opinion that the greater part of the errors which are introduced into the history of the vascular and calorific nerves of the great sympathetic are due to a confounding of direct and reflex vascular phenomena.

Vigouroux has found that every well-pronounced movement of inspiration or of expiration coincides with a dilatation of the pupil. Besides these, however, every energetic muscular contraction, as of the arm or leg, seems to have the same effect, although it may be due, he thinks, in the latter case, to the influence of those movements upon the respiration. The dilatation of the pupil amounts to about one third or one fifth of its diameter. This movement would appear to indicate that every time a centrifugal nervous current passes along the spinal cord, a portion of it is diverted into the first and second dorsal nerves. Among the muscles of the orbit, and those supplied by the fifth and seventh nerve, the contraction of the internal rectus alone is accompanied by a dilatation of the pupil. This difference, without doubt, depends on the third nerve

alone having connection with the oculo-pupillary region. The dilatation of the pupil which C. Bernard has found to accompany every painful impression may probably be, not a direct reflex effect of the pain, but a result of the motions, respiratory or other, excited by it.

Phillippeaux and Vulpian divided the lingual (sensitive) and hypoglossal (motor) nerve of the tongue, on the same side, in dogs, and connected the central end of the former by a suture with the peripheral end of the latter. A considerable portion of the unused end of each was removed. The experiments were several times repeated, and gave always the same result. The (peripheric) end of the hypoglossal became regenerated very rapidly (far advanced in two months, almost complete in four); and after this time its functions could be brought into play by irritation of the portion of the lingual to which it was joined. To avoid error, mechanical irritation was employed to excite it, as well as galvanism. The lingual was cut as high as possible, and pinched by a forceps; on each irritation there followed a strong and extensive movement of the corresponding half of the tongue. The authors draw the following conclusions:—(1) Sensitive nervous fibres may unite intimately, end to end, to motor fibres, and transmit to them the regenerative influence of the nervous centre. (2) Where this union is complete, irritation of the sensitive fibres is transmitted to the motor fibres, and through them determines muscular contraction. It is probable that, in like manner, irritation of peripheric motor fibres, united intimately, end to end, with central sensitive fibres, is transmitted to these latter, and produces pain. (3) These experiments lead us to think that, in the normal state, irritation, produced at any point whatever in the course of a sensitive nerve, is propagated at the same instant both centripetally and centrifugally; and it is probably the same with irritation of a motor nerve. Of course, in the animals thus experimented on, the *function* of the motor nerve remained abolished, though its action could be excited. When the hypoglossal of the opposite side was also cut, the dog was quite unable to move its tongue. [MM. Gluge and Thiernesse, whose results MM. Phillippeaux and Vulpian call in question, repeat their former statement, that the sensory fibres are never rendered capable of conveying motor influence, and *vice versa*. See 'Bulletin de l'Acad. Roy. de Belgique,' No. 7, 1863, p. 65.]

From the increase of reflex excitability which occurs in the frog when its head is removed, it has been inferred that there exist in its brain distinct nervous centres, which serve as moderators of reflex movement. Setchenow examined whether any direct evidence could be obtained of the existence of organs exercising such a function. For this purpose he divided the brain at different points; irritated its various parts by electricity or chemical agents, and finally excited it through the physiological channels. For the production of the reflex movements he plunged the frog's claw into a solution of sea salt. The results he arrived at were, that there exists in the brain a special moderating mechanism, and that it is situated in the optic lobes.

REPORT
ON
PRACTICAL MEDICINE AND PATHOLOGY.

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GENERAL PATHOLOGY.

TURNER, W., M.B.—*On the present aspect of the doctrine of Cellular Pathology.* Edin. Med. Journ., April, 1863.

Turner, adopting the above doctrine, adduces at some length details of its correctness in the case of the inflammatory changes occurring in the connective tissue in the cornea, in cartilage, bone, muscles, nerves, mucous membranes, serous membranes, skin, secreting glands, and in cancer and tubercle. He cites a case from his own observation, where the increase and growth of a cancer in a muscle depended evidently on multiplication of the nuclei belonging to the original fibres. In an inflamed pleura he traces also similar changes occurring in the subepithelial connective tissue corpuscles. The paper is suited for reference, but not for analysis.

CHAMBERS, T. K.—*Lumleian Lectures on the formation of Mucus and Pus.* Lancet, Aug. 8th, 15th, 22nd.

Chambers describes the lowermost corpuscles of epidermis, those resting on the surface of the cutis, as granular masses "identical with those seen in mucus." So when the superficial layer of epithelium is detached from mucous membranes, "there are brought into view floating granular masses of various sizes, which constitute what are familiarly known as mucous globules." They are exactly identical with those of the rete mucosum of the skin. These mucous globules Chambers thinks have the faculty of giving birth to an individual, and so to a succession of individuals, like itself. If we watch one nuclear mass we may often see a gradual change in its appearance. First a clearer nucleus appears in it, then two, three, or more smaller nuclei. Then the fine granular specks in its sides coalesce into a nucleus. Then a nucleus bulges and buds out from its side, and gets a constricted neck, which gives way, and the bud floats off as a separate globule. Or the whole globule may divide into two,

each with a separate nucleus. Chambers thinks that each of the globules contains a centre of life, into which the pabulum passes from the outside, nourishing them and giving them means to increase in number. This increase of low quasi-parasitic life Chambers regards as an indication of lowered vitality. From the circumstance that mucous globules are tinged by solution of carmine throughout their whole substance, while the liquor mucii in which they float is less stained, the lecturer draws the conclusion that it is to be regarded as the formed substance of which the globules are the nuclei, the parts which alone are capable of growth. Now if the mucin, or transparent medium in which the globules and granules float, stand in the place of fully-formed organic substance or cell, it will not retrograde into the condition of growing substance. Such a retrogression does not happen in cells. In an epithelial scale, for instance, the transparent area does not become nucleus matter. But it transmits the nutriment to the nucleus inwards through its substance without being destroyed. On this supposition the formation of mucin will be the highest development of the life of the globule, for it answers to the formation of tissue from nuclear matter. And in that case we should expect to find that the nearer its normal condition the morbid secretion can be collected, the more of this higher state of life it would exhibit, and that the further from its normal condition it is, the less there would be of the formed matter. Such is the fact. The fluid which first forms on an inflamed surface contains few globules, and much stringy transparent medium. Its nuclear matter has so far departed from life, that it cannot form separate cells, but only an imperfect common area. But as the inflammation goes on, this power is still more and more lost; the nuclear matter cannot form the mucin, it can only multiply; and hence the stringiness of the mucus disappears, and it becomes what we know by the name of pus. As far as the morbid matter itself is concerned, pus indicates in it a further deficiency of vitality than mucus—a deficiency of vitality shown for it in its internal self-multiplication, and secondly in its non-production of mucin. From observations of Sanderson, Buhl, and Remak, Chambers draws the conclusion that pus corpuscles are not so much descendants of epithelial cells as what may be called parasitic formations within them. They are parasites inside the epithelial cells, capable of increase by propagation within the tissue, just as on the surface the mucous globules were shown as parasites capable of increase by propagation without the tissue. And they grow quite independent of the true nucleus of the cell, and not derived from it. Thus the nuclear material may pass through the substance of the epithelial coat of mucous membrane without destroying it, and not only be itself unaltered, but may increase in quantity during the progress. This is one way in which the pus-material may reach the surface, and explains those cases in which the epithelium is quite uninjured. The transit of one apparently solid body through another equally so Chambers explains by considering them both as gelatinous. He also admits after Henle that pus and mucus corpuscles may be developed from plasma beneath the epithelial layer, and may make their way to the surface by disruption of the latter. As to the early condition of pus Chambers speculates as follows: “the same elementary substance which appears in integumentary tissues as the common material of the various

kinds of epithelium, appears also as granular nuclei in other tissues, in the ganglia of nerves, in the brain, in the parenchyma of the liver, in the spleen, thyroid and thymus. The same bodies occur in the blood, where they have been termed chyle corpuscles and white cells. They are found in largest quantities in the most recently formed, most quickly growing, and most actively renewed component parts of the animal frame. In short, the most rational interpretation of this form of organic matter is that which represents it as the common material of all tissues in its earliest state of elementary life. And as that which was to have formed epithelium is cast off as the basis of the mucus and pus globule, so that which was to have formed hepatic-parenchyma, nerve, or areolar tissue becomes pus, through some unsuspected transitional stage." The last lecture is taken up chiefly with therapeutical considerations and suggestions, such as the beneficial effect of a layer of muco-pus or inflamed surfaces as a protection against oxygen and cold, the injurious action of over much cool fresh air on weakly hospital patients, the good results of carbonic acid supplied to mucous membranes and ulcers, &c.

TRAUBE.—*Researches on febrile affections.* Med. T. and Gaz., August 1.

Traube seeks to determine the cause of the increase of temperature, which is the very essence of fever, and of which the increased rate of pulsation and respiration are only the consequences. The increase, he thinks, is due to a stronger contraction of the contractile fibre cells of the blood-vessels, and chiefly of those of the smallest arteries. Owing to the contraction of these minute vessels, less blood is carried to the capillaries in a given space of time, and the pressure on their internal surface is also diminished. The cooling of the blood is therefore retarded, and at the same time there is less absorption of liquor sanguinis by the tissues. Less water being carried to the superficial strata of the skin and lungs, evaporation from these surfaces is of course diminished, and thus another cause for a lesser cooling of the body is put into play. By this hypothesis all and every symptom of fever may be easily explained. Thus we find that during the rigor, the turgor of the skin and of the subcutaneous cellular tissue is diminished, the small arteries which are accessible to examination are contracted, the hands, the feet, and the nose are cooler than usual, while the temperature of the blood itself is increased. The cause of the contraction of the arteries Traube considers to be the great excitement of the vasomotor nerves occasioned by the amount of the fever poison in the blood. It has been shown by the researches of V. Bärensprung that the heat is already increased before the rigor sets in, but that it increases much more rapidly during than before the rigor. This may be explained by the circumstance that any poison acts the more intensely upon nervous matter the larger the quantity of it that is accumulated in the blood, and its accumulation in the blood necessarily depends upon the degree of activity in the organs of secretion by which it is eliminated. In the commencement of the febrile paroxysm, the quantity of the fever poison in the blood is so small that only a slight contraction of the arteries is thereby caused. The immediate consequence of this latter, however, is a diminished activity of the organs of secretion. At the time the rigor sets in the quantity of the fever poison in the blood is so con-

siderable that it may exert its full effect upon the vasomotor system of nerves, and the maximum of contraction of the blood-vessels is thus produced. If this maximum has been attained, the temperature of the blood must necessarily be rapidly increased, as the cooling of the body is nearly reduced to its minimum. Striking rigors are only observed if there is a sudden increase of heat, as in ordinary pneumonia; while in such acute diseases where the temperature is slowly augmented, as in typhoid fever, these are only shiverings. Thirst, anorexia, weak digestion, and constipation, Traube explains in the same way, viz., by assuming a contraction of the minute arteries, and a deficient supply of blood to the mucous membrane.

BEALE, LIONEL, M.B., F.R.S.—*Observations on the nature of certain healthy and morbid changes, and on counter-irritation.* Brit. Med. J., Feb. 21, 28.

Beale argues in opposition to Chambers, that the idea of counter-irritation clearly is, not to establish one disease for another, but to increase the action of one or more tissues, with the view of reducing the increased action which is already going on in other and more important tissues or organs. He thinks that counter-irritation by a blister in a case of chronic bronchial catarrh may act beneficially in two ways. First, by exciting through the afferent nerves in the skin an impression by which the afferent nerves distributed to the vessels of the mucous membrane are caused to contract, and thus a diminution in the supply of blood results; the direct consequence of this diminished supply of pabulum being a slower multiplication of the pus, and imperfectly formed epithelial cells. In consequence of the increased flow of blood to the skin, the young cells of the cuticle grow and multiply at the expense of the pabulum, which would otherwise have gone to feed the structures formed on the surface of the mucous membrane. Secondly, such an increased action being established in the deep layers of the epidermis, crude materials in the blood, which would otherwise have been taken up by the pus on the mucous membrane are appropriated here.

BEALE, LIONEL, M.B., F.R.S.—Brit. Med. J., Oct. 20.

Argues that in very severe cases of inflammatory disease the administration of very large quantities of alcohol does good, not by exciting or stimulating to increased action, but by moderating actions already excessive. Alcohol does not act as a food, but it diminishes the rate at which vital changes are proceeding, by causing cells which were living too fast to live more slowly, and by producing the death of many. When absorbed by the blood it renders the albuminous matters less fluid, reduces their permeating property, and interferes with the disintegration of blood corpuscles.

SCHOTT.—*On Calcareous Metastasis.* Wochenbl. Ztschr. d. k. k. Gesellsch. d. Aerzte in Wien, Oct. 15th, 1862; Brit. and For. Med.-Ch. Rev., Jan. 1863.

Schott describes the case of a child $1\frac{1}{2}$ year old, who died in consequence of being run over, four days after the accident. On examination of the body, besides extravasation of blood into the abdominal cavity, the vertebrae

were found injured, and there was suppurative spinal meningitis. The small intestines were very fragile, their follicles swollen, their mucous membrane, as well as that of the ascending colon, roughened as if with sand on its surface. After cleansing the mucous membrane it was seen to be covered here and there with white roundish scales of about the size of poppy seeds, which followed the course of the minute vessels. On microscopical examination of these scales with the aid of acid, they were found to be made up of calcareous molecules deposited on the surface of the mucous membrane and along the vessels, the glands remaining free. Schott cites Virchow's statement that, in all the six cases observed by him, important changes had taken place in the kidneys, and that these alterations ought to be looked upon as of great importance with reference to the calcareous deposition, seeing that in obstructed excretion of calcareous salts by the kidneys, the deposition of these salts must occur. The author observes that, in most cases of calcareous deposit, a disease of the bone existed, and that among the cases of Virchow, only one exists in which no source for the calcareous salts was to be found; whilst in his own case, though there was certainly disease of bone, yet it was of very short standing, and, moreover, no disease of the kidneys existed; consequently, an essential cause for the calcareous deposit was absent. He also notices the fact that, in most of the cases of calcareous metastasis reported, the lungs more frequently than the stomach or bones were the seat of the deposit.

GENERAL SYSTEM.

LATHAM, P. M.—*General remarks on the practice of medicine.* Brit. Med. Jour., Jan. 3, 10, 17, 24.

In Jan. 17th No., Latham records two cases of extreme frequency and rapidity of pulse, which came on suddenly, in the first to all appearance as the result of puerperal fever poison, a rigor having preceded forty-eight hours. Death ensued in about twenty-four hours, without the fever having developed itself. In the second, a lady, æt. 40, was suddenly attacked with death-like prostration, which continued for five days and nights. Stimulants were freely administered the whole time, and kept the heart from quite stopping. At last, reaction began to appear, scarlatina eruption showed itself, the disease ran a favorable course, and the patient recovered. Latham remarks that such cases prove the true significance of the frequent pulse, viz., that it is a sign and a measure of the degree in which life, and the powers of life, are affected and fail. He goes on to mention the following curious circumstance which, he says, he has often observed. The nervous system having reached the degree of collapse indexed by the countless fluttering pulse, carries with it the pathological consequence of suspending for the time the course of the disease. Whatever be the disease which it attends, whether scarlatina, or measles, or erysipelas, or small-pox, or whatever be the stage it has reached, at that stage it will stop, and all specific morbid actions come to a standstill; perhaps to be resumed, perhaps not. The first, if the nervous system rally and recover; the second, if the pulse goes on fluttering, though many days have yet to pass before the nervous system has collapsed into death. When the all-subduing constraint of the nervous

system is taken off, the disease takes up its course again from the stage at which it was arrested. In June 24th No., Latham sets forth how a healthy and strong system can bear an inflammation without (as evidenced by the pulse) being vitally hurt by it. The pulse, though it becomes characteristically hard, yet is but moderately quickened, or may not be at all. In states of cachexy and weakness, this is reversed—the system feels the disease severely, and bears it ill. Similarly with regard to depressing remedies—in the one case they are well borne and do good, in the second they are injurious.

DUCHESNE DUPARC. *J. de Med. and de Chir. pratiq.*, vol. 34, p. 78.

Duchesne Duparc records the case of a baker who had got so fat that he could no longer go out of his house. He was reduced 33 lbs. by 400 pills of extract of "*fucus vesiculosus*," taken at the rate of four to ten daily, without any unpleasant symptoms. Another case (*v. loc. citat.*) is recorded by M. Kuhn, where a man who had a very large accumulation of fat in his abdomen, and suffered with great dyspnoea and inability to exert himself, was quite cleared in about two months by the same remedy.

OLIVER, W. S., M.D. *Lancet*, Jan. 17.

Oliver insists that preserved milk, meats, vegetables, pickles, and lime juice have no efficacy whatever as anti-scorbutics, grounding this statement on "extensive inquiry and practical experience." Salt meat causes scurvy, from having all its protein materials dissolved out and removed in the brine. The albuminous substances of preserved meats and vegetables are rendered totally inert by the protracted boiling to which they are subjected. Canadian backwoodsmen find raw potatoes an infallible cure for scurvy, which comes on when they subsist on salt pork, boiled potatoes, and biscuits.

FÖRSTER, R. — *Report on Typhus*. Schmidt's Jahrb., vol. 117, pp. 89—130.

This report comprises the literature of the subject from 1858 to the middle of 1862. Section (A) treats of the connection existing between the principal forms. Schnepf ('*L'Union*,' 118—128, 1861) believes, from his observation of disease in Egypt, that one of the different forms of typhus, under certain circumstances, can change into another, and that different forms of typhus may be produced by the same infection, according to variation of climate and race. Cazalas ('*L'Union*,' 144, 155, 1861) observed fever at Constantinople, and in the Italian war, and describes the typhoid or abdominal, and the typhus or exanthematic, as the two principal species. He does not, however, think that they can be distinguished at the bed-side, nor after death, and states that their symptoms, cause, periods, duration, terminations, and morbid anatomy are identical, and that they require the same prophylaxis and treatment. He thinks that there are also numerous typhous affections which have the same origin, but run a different course. Smoler ('*Memorabil.*,' vii, 1862), and Skoda ('*Allg. Wien. Med. Ztg.*,' vi, 1861), both maintain the identity of typhoid and typhus. Uhle, from experience of fever in Dorpat, is led to adopt the contrary views. Schnepf finds that gastric and bilious fevers in Egypt easily change, on the one hand, into remittents; on the other, into conti-

nued typhus. From his description it seems as if malarious fever appeared in the way of an interlude during the course of a typhus. Of 589 cases reckoned as typhus, which Cazalas treated during the Crimean war, 444 were affected with scurvy. In these the disease developed itself most rapidly, so that in 1—2 days the typhus condition was fully formed, stupor constituting the only pathognomonic and constant sign. Often, especially in very cachectic individuals, extreme collapse occurred early, which terminated sometimes in an acute rapidly fatal meningitis, or, in other instances in enteric fever. Sometimes, but much more rarely, and only in strong persons the disease began with the ordinary symptoms of a cerebral, or cerebro-spinal meningitis. In non-scorbutic persons typhus began at first almost always with rigors and fever, which occurred intermittently, then the disease assumed more the remittent character, and, finally, appeared as actual typhus. Out of 31 patients dying of typhus (abdominal and exanthematic) Cazalas found in 31 Peyer's patches swollen, honey-combed, reticulated, ulcerated, perforated, or in progress of cicatrization. Lebert ('Virch. Arch.,' xiii, 1858) observed in three years at Zurich, among 663 typhus patients 503 cases of abdominal typhus and 161 of abortive typhus. The latter affection is prone to recur, and affords no protection against the abdominal form. The two disorders appear to alternate, one receding as the other prevails extensively. The abortive may pass into the abdominal form. Both have much in common in their causes, and prevail in the same houses.

Section B, on *Ætiology*.—Ebers ('Gunsburg's Ztschr.,' ix, 1858) observed an epidemic of abdominal and exanthematic typhus at Breslau, in which more than 1640 cases were taken into the hospital. The abdominal form had been epidemic for eight years before exanthematic fever broke out. During this time there had been bad harvests of the cereal and potato crops, provisions had been dear, and misery had been prevalent. Brand puts down night-watching, over-exertion of mind and body, as causes of typhus. At Stettin, the disease was most prevalent in a dirty, damp, ill-drained part of the town, where filthy water was most commonly used for drinking. Smoler noticed removal from the country to the town as the most constant cause of sporadic fever, and ascribes its effect to the bad sanitary arrangements of large cities. He observed at Prague that all the typhus cases came from recently inundated districts. Lebert's experience agrees very closely with Brand's. This author regards abdominal as nearly as infectious as exanthematic typhus, and thinks that infection commonly results from other persons using the same privy into which the dejecta of the sick have been thrown. A case is cited where all the members of a family sickened, except one, who had used a different privy. He states that the gaseous emanations of fecal matter, unless mingled with the typhous contagion, do not cause infection; but that the solid components do when they are taken into the body either in drinking water, or in any other, and this whether they proceed from a typhus patient, or not. He describes several cases in which a great number of persons sickened, who had drank water contaminated by sewerage. Kerschensteiner ('Bayer. Aerztl. Intell. Bl.,' 17, 1859) believes that typhus is commonly propagated by infection, and relates a striking example of this in a country village, where the disease spread from one stranger to those in the same

house, and then to those who came in contact with them, until eighteen persons were affected. Smoler relates a case where fever to all appearance originated independently of any infection. The death rate has varied from 11 or 12 per cent. to 25 per cent. According to Lebert the mortality from typhus has been least (relatively) when it has been least prevalent, Fiedler ('Arch. d. Heilk.', iii, 2, 1862) observed the reverse. Buhl and Quinquerez ('Oesterrh. Ztschr. f. prakt. Heilk.', vii, 32, 1861) agree in the observation that the occurrence of the greater number of deaths in the early period of typhus is a sign that the disease is on the increase; and, on the other hand, that the transfer of the chief mortality to the later period indicates that the epidemic is declining. As regards the influence of the season of the year, Ulrich, Lebert, and Fiedler agree pretty nearly that fever is least prevalent in February, April, and May, and most in August, September, and October. Fiedler states that at Dresden fever prevailed as much in the two last months of the year as in October, which was not the case at Zurich or Berlin. The mortality is not proportionate to the frequency of the disease, mostly inverse. The influence of sex shows itself in the greater frequency of fever among males, the number of male patients being in one year thrice that of females; this, however, is not constant, the number being sometimes more numerous. Lebert, Ulrich, and Fiedler agree that the mortality is generally somewhat greater among females than among males, though in some years the reverse is the case. As to age, Lebert reports that the greatest number of cases occurred from 21st to 25th year, the next greatest from the 26th to 30th, and the next between the 16th and 20th. The number of attacks after 40 was far greater at Zurich than at Paris. One case occurred between the 71st and 75th years. As to the influence of age upon mortality Ulrich states that the greatest absolute though the smallest relative mortality occurred between 40 and 50. Lebert found the smallest relative mortality to occur in the period from 22 to 25, which exhibited the greatest frequency of disease. After 40 the mortality was nearly 1 in 3 of all cases, between 16 and 40 it was 1 in 5. Fiedler observed great differences between years immediately succeeding each other as to the mortality. The highest absolute mortality was in the 24th year of life (20 per cent.), in the 25th it was only 2.6 per cent., in the 28th it was 19.6, in the 22nd 12.3. In childhood the absolute and relative mortality was small, in advanced life it was absolutely small, but relatively high. The influence of social position does not appear to be marked.

(c) *Symptoms, complications.*—Ebers remarks that in some instances the invasion of the disorder is marked by a peculiar morbid sensation, which is followed by several days of apparent health before the disease actually commences. Rheumatoid pains, depression, occasional angina, and hyperæsthesia of the surface are noticed by several as the earliest symptoms. Ebers remarks of the exanthematic fever at Breslau that the excessive elevation of the temperature, and its permanency, were a kind of barometer of the danger of the disease. Rapid fall of the temperature was almost always a sign of failing vital power. Lebert found the rate of the pulse generally to accord with the temperature; when the latter fell below the normal figure, the pulse declined to 52 or 56. Great frequency of a dicrotous pulse usually coincided with great elevation of temperature.

During convalescence, when the patients first began to leave their beds their great weakness caused great acceleration of the pulse, without increase of temperature. The respiration rate did not follow that of the pulse. At Breslau the sensorium remained in not a few instances undisturbed almost to the time of death. Tetanic rigidity was one of the worst signs; sleeplessness, when constant, coma and sopor, were more ominous than persistent delirium. Skoda does not think the diarrhoea in fever is dependent on the intestinal affection, since the latter may exist without any diarrhoea; and diarrhoea is often present without any anatomical lesion. Pain in the ileo-cæcal region was scarcely ever observed by Ebers; the abdomen was distended and soft. Splenic enlargement was not constant. Lebert observed roseolous eruption in all his male patients, but only in about two fifths of the female, and in these never to the same extent as in the males, in whom it was so extensive as to resemble the eruption of exanthematic fever. Ulrich states that roseola was seldom absent in marked forms of abdominal fever, and often continued very marked up to the fourth or fifth week, the eruption recurring with relapses. Smoler and Skoda are at issue as to whether an eruption like typhous roseola is met with in any other disease. Gillhuber ('Oesterrh. Ztschr. f. prakt. Heilk.,' vii, 1861) observed at Vienna a maculous eruption only once; in half of the cases it was papular. Ebers states that copious fetid-sourish-smelling perspirations in the second stage of exanthematic typhus were mostly a fatal sign. Roser ('Memorab.,' iv, 4, 1859) describes a peculiar alteration of the skin which he observed in eight cases of typhus, and in these only. They were all severe, and one proved fatal. The alteration consisted in a sort of splitting of the skin at the lower anterior part of the thigh and the lower posterior part of the upper arm. This splitting formed a number of transverse streaks, about as long as a finger, broadest in the middle, and tapering in a wavy manner to the two ends. The skin in these parts was elevated a little, and of a bluish tint, much resembling a vesicle, but not pitting on pressure. The change was gradually produced in the course of some days, and disappeared much more slowly, by the end of six months. Roser believes that the fissuring of the skin depended on the stretching occasioned by the flexion of the knee and elbow-joints, while its texture was weakened by the impaired nutrition. In one case, alluded to by Förster, the streaks more than half surrounded the very emaciated limbs. Paralysis of the lower limbs and œdema of the feet occurred in two instances during convalescence. Roser ('Memorab.,' v, 3, 1860) dwells on the danger which an attack of typhus involves to very fat persons. The pulse becomes extremely quick and, if the heart's tissue is degenerated, very small. The persistence and increase of the frequency of the pulse, without a corresponding increase of the other symptoms, is characteristic of fatty accumulation in the chest, and fatty degeneration of the heart. From failure of the circulation, the extremities become cold at an early period of the fever, and at a time when no vital organ appears to be dangerously affected. Skoda points out various signs (flagging of the circulation in the extremities, cyanosis, smallness of the pulse, dulness or vanishing of the heart's sounds, or murmurs) as probable signs of the formation of coagula in the cavities of the heart. Vogt ('Schweiz. Mon. Schr.,' v, p. 33, 1860) states that the chief peculiarities of typhus urine, as com-

pared with that of other febrile diseases, as pneumonia, are its containing albumen and sugar, although these are not constantly present. The amount of albumen seems, on the whole, to vary with the degree of fever, increasing with the disease and declining also along with it. In cases where general dropsy occurred during the last period of the disease, or during convalescence, albumen was no longer found in the urine. Lebert denies that the albuminuria stands in any connection with the intensity of the fever, and has noticed its occurrence not uncommonly in abortive typhus. Vogt agrees with Brattler that albuminuria in typhus and other fevers is generally rather the result of the febrile condition itself than of a nephritic complication. Schwartz ('*Rigier Beiträg.*,' iv, 1859) distinguishes two forms of grave renal inflammation occurring in the course of typhus. In one there is pyelitis and nephritis, with small, indistinct abscesses in the renal parenchyma, resulting from retention and reflux of the urine. It usually ends fatally, with comatose symptoms. The urine contains during life pus, albumen, and often blood. The pelvis of the kidney is found dilated. The second form results from renal hyperæmia, induced by the fever itself, and issues in the changes characteristic of morbus Brighti (acute desquamative nephritis). The urine contains albumen, and often blood, but no pus. Dropsy, on the whole, but rarely ensues. The two forms may be blended together. Smoler draws attention to the remarkable absence of oxalate of lime in typhus urine, and proposes it as a means of diagnosis between typhus on the one hand and ague or acute miliary tuberculosis on the other. Lehmann and Volk ('*Wien. Med. Wchnschr.*,' viii, 1858) find no constant proportion between the increase of the urea and the decrease of the Cl.Na. on the one hand and the intensity and peril of the disorder on the other. Vogt opposes Franke's view, that the absence of chlorides in the urine in typhus and other fevers depends only upon the loss of appetite and the non-ingestion of aliment. He finds that they appear in the urine as soon as the disease has begun to decline, and thinks that their absence is the result of grave derangement of the assimilating processes. Ulrich ('*Deutsche Klinik*,' xxiii, 1859) and Lebert both report the occurrence of epistaxis in some severe cases of typhus. The former observed eight cases where the hæmorrhage occurred towards the beginning of the second week; plugging of the anterior and posterior nares was requisite in all; but in spite of this, six of them died speedily from exhaustion. There is much risk that, on account of the patient's apathy and his supine position, most of the blood gets swallowed, and attention is not drawn to the existence of the hæmorrhage until collapse rapidly ensues. Vogt mentions a case of intermeningeal, and Ulrich one of post-peritoneal, hæmorrhage, behind the ascending colon. Lebert records a case of chronic dysentery succeeding typhus, which produced a recto-vaginal fistula, and was attended with peritonitis and fatty state of the liver. Two cases of peritonitis from intestinal perforation are given, the results of which go to show that perforation is by no means always fatal. Ulrich found inflammatory lung affections to hold the first place among the complications of typhus; they never appeared before the third, often in the fourth or fifth week, and not uncommonly caused death even when convalescence had commenced. Lebert, particularly at one period, met with numerous cases of severe

bronchitis, often terminating fatally, and presenting after death extensive lobular carnification. Among 418 cases of typhus, Ulrich had six of erysipelas of the face, coming on about the third week; all but one ended fatally. Otitis in one year was frequent among Lebert's cases, but all recovered. Parotitis, in Ulrich's experience, was a much less ominous occurrence than it has often been regarded. In many epidemics all, or nearly all, those thus affected have died; but of six cases which Ulrich had, and which proceeded to suppuration, only one ended fatally, and this was from the exhaustion induced by other purulent depôts in different parts of the body. Sander also had four recoveries out of six cases. Gigon ('L'Union,' 115, 117, 1861) records a case of considerable parotid swelling, with extensive sloughing and death, in a boy aged twelve months. Lebert reports a case of noma (gangrene of the mouth) occurring in a boy aged 10, and ending favorably. Smoler observed in some instances that bed-sores formed upon an eruption of ecthymatous pustules, or the resulting ulcers. Laryngeal ulceration and necrosis are often latent until œdema of the glottis suddenly appears and brings life into extreme peril. Sestier found in eighteen typhus convalescents thus attacked necrosis of the larynx in twelve, and Emmet in thirty similar cases found laryngeal ulceration in twenty-three. Charcot and Dechambre ('Gaz. des Hôpit.,' 1859, 100) describe the typhous ulcer as seated on the posterior wall of the larynx, where the mucous membrane covers the arytenoid muscles. At first there are one or more diphtheritic patches, which are succeeded by ulcerations of various depth. The arytenoid and even the cricoid cartilages become exposed and detached, and abscesses are often formed. The affection may appear in the second or third week, but usually coincides with the last stage of the disease, or even with convalescence. Unless abscesses form, the symptoms may be very slight. The disease not uncommonly becomes chronic, and passes into laryngeal phthisis. Baudot ('L'Union,' 83, 1859) records a case where a female, three months after an attack of typhus, was suddenly attacked with laryngeal symptoms, which continued six or seven months longer, when she brought up, after a severe paroxysm of suffocation, two cartilaginous sequestra. In three or four months she recovered completely, with the exception of some alteration of voice, which was rather rough, guttural, and deep. Several cases of embolia, thrombosis, and gangrene of the limbs, during and after typhus, are recorded. In one the posterior tibial artery was affected; in the others, different veins. Relapses (complete) were observed by Sander ('Deutsche Klinik,' 7, 1861) only twice among 301 cases of typhus. Buhl ('Bayer. Aerzt. Intel. Bl.,' 5, 1861) found, among 500 autopsies of typhus, traces of relapse in 15, or in 3 per cent. During the prevalence of an epidemic the relapses were 5 per cent.; at other times, 2 per cent. In the hospital at Leipzig 40 relapses occurred among 548 typhus patients, *i. e.* 6.5 per cent.; or, if the deaths are omitted, the ratio is 8 per cent. In some years the proportion of relapses (omitting deaths) fell to 4.4 per cent., and in others rose to 14.3 per cent. Human states of these cases that relapses occurred more frequently after typhus than after any other disease. He observed their commencement at all periods, from three to seven weeks after the beginning of the original disease. More than one third, however, occurred at the beginning of the fifth week. Buhl's ex-

perience is nearly the same. Michel ('L'Union,' 103, 133, 137, 139, 1859) finds that, generally, the relapse is of much shorter duration than the original disease, the average difference being about eleven days. Occasionally, however, the reverse is the case. Human traces the occurrence of relapses to the continued action of the original causes rather than to a fresh infection, because in the very year when typhus was most prevalent the number of relapses was smallest, and because fifteen out of thirty-six relapses had occurred before the fever had quite ceased. The degree of severity of the original disorder does not seem to influence materially the occurrence of relapses. From July to September they were less frequent than at other times. Females were affected twice as often as males. No age was exempt, but the twentieth year seemed most liable. Michel states the greatest number to occur between fifteen and twenty-five years of age. A roseolous eruption, mingled with petechiæ, usually appears at the commencement of relapse; sometimes later. It is sometimes more copious than in the primary fever. Sudden death, with cerebral symptoms, occasionally occurs in relapses. *Abortive typhus*, according to Lebert, closely resembles abdominal typhus at the outset, but its symptoms are less severe; the termination is always favorable, and the duration of the disease shorter. In more than half the cases convalescence commenced in the course of the second week. Of 161 cases, only four passed into abdominal typhus. The disease is not infrequent in children, and in them generally runs a more favorable course than in adults. Increase of the bronchial catarrh to dangerous bronchitis sometimes occurs, and during convalescence croupous exudation in the mouth and throat, and follicular enteritis. Langenbeck ('J. f. Kinderkrankh.,' xxxvi, 1861) notices especially the liability of the mesenteric glands to become considerably swollen and infiltrated, even when there is not much morbid change in the intestine; and he believes that they do not always return to their normal size, but, especially in scrofulous children, become tuberculous or atrophied, and give rise to long-enduring disorder of nutrition, and to chronic marasmus. The period of approaching puberty in the female sex, especially when there is a tendency to chlorosis, presents exceptions to the usually favorable course of typhus in children. The disease often sets in with violent symptoms, is very irregular in its course, presents manifold nervous phenomena, and may terminate either in a sudden collapse or in a long-protracted convalescence. In children between one and two years old typhus often begins with convulsions or other cerebral symptoms. With regard to exanthematic typhus, Langenbeck remarks that in some epidemics children escape almost entirely, while in others the reverse is the case. The symptoms seem to be much the same as in adults, but milder, and convalescence ensues earlier.—*Pathological Anatomy*.—Buhl ('H. u. Pf. Ztschr.,' 3 R. iv), distinguishes, on pathological grounds, two periods of typhus, as well as the disease itself and its secondary processes. The first period comprises the enlargement of the mesenteric glands and those of the ileum, and extends always over just three weeks. The length of the second is indeterminate; in the most favorable cases it corresponds to convalescence. In it occur various secondary phenomena, such as inflammation, embolism, softening, gangrene, and wasting. When relapses take place, a fresh crop of erup-

tion occurs in the intestine, recent deposits and swelling being found at the margins of old ulcers. In children, according to Langenbeck, the changes in the intestine are rarely so marked as in adults, much less ulceration occurs, and, indeed, in most cases the swelling of the glands subsides without any. Lebert records a case in which new villi were developed on the cicatrices of the intestinal ulcers. The patient was aged 20, and had lived six months after the commencement of the fever. Ebers, in 285 fatal cases of exanthematous typhus, found thirty, in various stages of the disease in which the spleen appeared quite normal; it was rarely much enlarged. Buhl states that the liver in typhus becomes larger and more full of blood, and the cells filled with fine granules. In the severer forms of the disease its condition approaches that of yellow atrophy. In the later periods fatty degeneration is not uncommon. Lebert and Ebers' experience is to the same effect. The kidneys are overfull of blood and enlarged; their epithelium readily separates from the basement membrane, and decays. Ebers reports six cases of gangrene of the lungs among 1640 patients. Buhl has made some interesting inquiries with respect to the amount of water contained in the cerebral substance at different periods of typhus. He finds that in the first three weeks of typhus the watery constituent is regularly increased about 5.98 per cent.; that this increase is most considerable at the end of the first two weeks, and gradually diminishes again in the third; and that after the termination of the disease itself the amount of watery constituent falls again to, or below, the normal figure. Coincident with the accumulation of watery fluid in the cerebral tissue, there occur congestion of the vessels and sinuses of the dura mater, congestion of the pia mater between the convolutions, loosening and softening of the medullary substance, and sometimes swelling. The subarachnoid spaces contain but little fluid. Buhl designates this condition as acute cerebral œdema. In the opposite condition, that of acute cerebral atrophy, the tissue of the brain is stiff, the gray matter pale, the medullary brilliantly white. The arachnoid is milky; the subarachnoid and ventricular spaces contain a large quantity of fluid, effused to occupy the room of the shrinking organ. The symptoms during life correspond with the above-described conditions. While the cerebral tissue contains much fluid, there is unconsciousness; when the fluid disappears, consciousness returns. This correspondence is very striking in cholera, during the asphyxial stage of which (when the water-amount is much diminished) the mind is clear; while in the typhoid stage (when the watery constituent returns to the normal amount) stupor and coma ensue. Buhl does not think that there is an invariable connection between the existence of a normal amount of fluid in the brain tissue and its capacity for functional activity, but that the latter depends on tissue metamorphosis taking place equally and regularly. Tetanic phenomena in cerebral œdema appear to Buhl to depend on the amount of cerebral activity on the one hand, and on increased pressure of fluid on the cord on the other. Buhl describes the muscular tissue of the heart as swollen, brittle, and having its fibres beset with fine granules, the results, he says, of a parenchymatous inflammation. Smoler corroborates Stokes's account of the softened state of the heart, and of the corresponding weakening of the first sound. In three cases described by Lebert an unusual development of gas in the blood, or

in various organs, was observed after death. In one instance the liver was quite spongy, and numerous air-bubbles were seen under its serous covering. The spleen, the kidneys, intestine, mesentery, subcutaneous tissue, and cervical arteries, were similarly affected. The gas was supposed to be CO_2 , from its acid smell and from the acid reaction of the blood. In all the cases intestinal hæmorrhage had occurred before death. Ebers found in three instances extravasation of blood in the recti-abdominal muscles.—*Treatment.* Monneret, Herard, Brand, Almès, all agree in the importance of giving a very nourishing and supporting diet in typhus. Bad symptoms are less likely to occur, convalescence commences sooner, and complications are more rare. Gigon lays stress on due ventilation of the sick-room, and mentions that almost all the patients died who were placed in a certain corner, where there was always a foul smell because it was difficult to renew the air. Lebert finds advantage from the application of leeches to the head in cases of severe head affection, apparently meningitic. Lauer ('Ungar. Ztschr.,' xi, 6, 1860,) recommends Pot. Iod. as a specific in abdominal typhus, from eighteen years' experience. He affirms that, given before the tenth day, it will save 97 per cent. of all cases. The dose is about gr. i. o. h. Several observers maintain the advantage of giving emetics at the commencement, either for the purpose of merely clearing out the primæ viæ, or of producing an abortive effect on the disease. Others regard them as absolutely injurious. Calomel is thought by Brand and Kerschensteiner to render the course of the disease milder when given in full doses at the outset. Billard, E. ('Gaz. des Hôpit.,' 4, 6, 7, 1860) advises the administration of saline purgatives as long as the stools are offensive, believing that the presence of fetid gas in the intestine gives rise to bad symptoms. Digitalis is of use in severe cases when the violence of the fever threatens danger; it lowers the temperature and the pulse. Veratria was found by Vogt to have the effect of rapidly relieving the head and suppressing the fever. It is not to be given if the circulation is very much depressed. Quinine has been tried by several, but the general result is by no means favorable to the view that it has any power of arresting the fever. Almès gave a chalybeate water for habitual drink to his patients, with advantage. Brand found chlorine water and pyroligneous acid of no use. Van der Decken and Brand give detailed accounts of the treatment of typhus by hydro-therapy. Furuncles or small abscesses are described as occurring commonly, and as having a critical significance. A full eruption of this kind is always followed by a rapid and complete recovery. The cerebral functions remain nearly intact; delirium is exceedingly rare. After every bath the patient falls into a deep, tranquil sleep, and remains thus during three fourths of the whole period of the disease. The tongue never gets dry and crusted, desire for food continues, and diarrhœa is slight, or ceases at a time when usually it is severe. Ileo-cæcal pain and meteorism soon disappear; ulcerations probably do not form. One general rule of the treatment is to carry the cooling process by means of affusions, baths, and airing, to such a degree as to reduce the febrile phenomena to a minimum. As soon as the diagnosis is clear, cold affusions with water at 59° – 52° Fahr. are to be commenced, the patient being placed in a half-bath at 84° Fahr., and to be repeated every three or four hours. During exacerbations of

fever the temperature of the water is to be lower, and the bath to be longer continued, say ten minutes. Brand lays stress on the management of what he calls degenerated typhus, when the cerebral power is greatly depressed. The affusions must not be of a lower temperature than about 68° Fahr., the bath not below 90° Fahr., the wet-sheet rubbings not below 62° Fahr. The baths must also be of shorter duration, and repeated about three or four times daily, especially when the sensory faculties become clouded, and the patients get restless. In cases showing great adynamia and profound sopor, frequently repeated cold affusions on the head are recommended. The occurrence of convulsions, which are not altogether rare, make it necessary to abstain from all water-treatment except compresses. Absolute repose, and the avoidance of all shock to the nervous system, are essential. In cases of copious intestinal hæmorrhage Liebert recommends Argenti Nitrat. internally and in enemata, and ergotin every two or three hours. If bronchial secretion collect so as to interfere with the breathing, Skoda advises an occasional emetic.

MURCHISON, C.—*On the Causes of Continued Fevers.* Lond. Med. Rev., April, 1863.

Murchison remarks with regard to typhus—(1) its tendency to prevail in great epidemics; (2) that though it is not especially linked to any season of the year, it prevails most towards the end of winter, and least towards the end of summer; (3) that destitution predisposes most powerfully to it; (4) that it is eminently contagious; (5) that defective ventilation and overcrowding of human habitations exercise a powerful influence over its production and propagation. *Relapsing fever* is also essentially an epidemic disease, being quite absent for some years from the London Fever Hospital. Starvation appears to have more to do with its production than overcrowding. *Enteric fever*, on the other hand, is an endemic disease, and varies in its degree of prevalence much less than typhus and relapsing fever. It prevails most in autumn. A high temperature is favorable to the increase and spread of the disease, while it is checked by cold and wet. Destitution does not predispose to it, nor is it generated by overcrowding and bad ventilation. Recent residence in an infected locality predisposes strongly to enteric fever. It is contagious, but only in a limited degree. Emanations from sewage and certain forms of putrefying animal matter produce enteric fever, either, according to one view, from spontaneous generation of the poison in the decomposing filth, or, according to the other view, merely because the sewage is the recipient of the infectious excreta of some previous fever patient. Murchison advocates the former opinion—(1) Because there are many facts which show that enteric fever often arises from bad drainage, independently of any transmission from the sick. The danger arises when the drain becomes choked up, when the sewage stagnates and ferments, and when the transmission of a poison from any distant locality is impeded, if not completely arrested. (2) There are numberless instances of enteric fever appearing in houses having no communication by drains with any other dwelling, as, for example, in isolated houses in the country. (3) There is no evidence that the stools of enteric fever are of such a virulent nature as has been stated. If an infinitesimal dose of the poison will produce the

disease, it is extraordinary that the attendants on the sick are rarely attacked. Murchison has fed a pig for six weeks on the stools of patients suffering with enteric fever, but the animal got very fat, and remained well, and when killed its intestines were perfectly healthy. Yet the pig is well known to suffer from enteric fever. The stools in this disease are remarkably prone to decomposition, which would surely destroy a specific animal poison similar to that contained in the variolous or vaccine pustule. (4) The fact that the prevalence of the disease is influenced by temperature is opposed to the idea that it depends on a specific poison derived from the sick, but is readily accounted for on the supposition that the poison is generated by fermentation or decomposition. It is possible that the stools of enteric fever are more prone than ordinary sewage to the peculiar fermentation by which the poison is produced, and even that in certain cases the fermentation may have commenced before their discharge from the bowels. In this way enteric fever may occasionally be propagated by the stools, but even then the poison is the result of decomposition, and not of a specific eruption. To the objection that persons are often exposed to the effluvia from decomposing animal matter without contracting enteric fever, Murchison replies that it is not every kind of animal matter that will generate the poison of enteric fever during decomposition, and that even in the case of sewage it is probable that certain conditions are necessary. It is true that a few cases of enteric fever occur which cannot be traced to defective drainage. On this Murchison observes, that if the disease can be proved to originate in a certain way in a number of undoubted instances, it is reasonable to infer that its causes are similar in all cases where it has a spontaneous origin. In conclusion, it is argued that, as there is no analogy between the poison of fever and an organized being, there is no valid ground for denying the spontaneous generation of the former, because we are assured that the latter are never so produced.

PRIMAVERA and PRUDENTE, MM. (Bull. Génér. de Thérap., Aug. 30th, 1863; Brit. Med. Jour., Sept. 12th), state that absence of chlorides from the urine is a pathognomonic sign of typhoid fever. During the increase of the disease, or when it is about to end fatally, there is also a very considerable diminution of the phosphates and urates. When recovery commences, the phosphates are at first rapidly increased; then the urates in like manner; and, finally, the reappearance, though tardy, of the chlorides, shows that convalescence is fully established.

HARVEY, E. R., M.D.—*On Continued Fever, as it has appeared at St. George's Hospital during the period May to November, 1862.*

Of 3 cases where the intestines were found ulcerated, 1 had no skin eruption; the others had rose spots. Of 3 whose intestines showed patches of congestion, 2 had mulberry spots, and 1 only petechiæ. In 8 cases of typhus, diarrhœa occurred, contrary to former experience. Including the fatal cases, there had been 58 cases of fever during the period, of which 9 had died. Of typhus there were 34 cases, of typhoid 12, and of febriculæ 12. In 17 of all the cases there was no eruption; 2 of these were typhoid, 2 typhus, and the others febricular. All the typhoid patients had confusion of thought, but no active delirium. Of the typhus patients, in 5 the brain was clear, 11 were slightly delirious,

and 18 severely so. In no case did a case of each type come from the same house. The treatment mostly pursued was supporting and symptomatic; one physician, however, gave an emetic at first, and afterwards quinine in doses of \mathfrak{Uj} , o. horâ, ad tres vices; subsequently gr. ij, 4tis horis. This plan did not seem advantageous.

BUCHANAN, G.—*On recent Typhus in Lancashire.* Brit. Med. Journ., March 14th.

Since the great typhus epidemic in Lancashire at the time of the Irish famine in 1847-48, there has been scarcely any of this disease in the cotton towns. Typhoid has, however, prevailed, and been often returned to the registrar as typhus. In 1862, however, positive maculated typhus has made its appearance. The disease has been most prevalent at Preston, and next at Manchester, and has also appeared in other places. The origin seems traceable to overcrowding of human beings together in a state of destitution and semi-starvation. The epidemic began to subside at the very time that the condition of the people began to improve, as shown by the diminished numbers in receipt of relief.

MARTYN, S.—*On the recent occurrence of Typhus Fever in Bristol.* Brit. Med. Journ., July 11th.

Martyn states that at least 35 cases of veritable typhus have occurred in Bristol during November and December, 1862, and January, 1863. Six at least died. Those remedies did most good which relieved the head; and in severe cases the cerebral symptoms were paramount. Thus, a raised position, shaving the head, leeches on the temples, cold to the scalp, antimony, purgatives, warmth to the extremities—all did good. Stimulants could by no means be used indiscriminately. Quinine apparently distressed the cerebral circulation. Opium sometimes aided sleep, but rarely.

CHAMBERS, T. K.—Brit. and For. Med. Rev., Oct., 1863.

Reports that he has treated, during twelve years, at Saint Mary's Hospital, 230 cases of continued fever. Of these, 109 were treated on what he calls general principles, *i. e.*, with neutral salines, ter vel quater die, small doses once or twice a day of Hydr. Cretâ at first, and subsequently with bark, ammonia, and wine, when the symptoms required it. The others were treated with liquid animal food every two hours, and a dose of dilute muriatic acid. Of the first group there died 21, exclusive of 2 who succumbed speedily after admission; and of the second, 3, exclusive of 1 dying in the same way. The mean period of convalescence was shortened in the subjects of the acid treatment by two and a half days. Chambers ascribes the greater success of the acid treatment to the improved condition of the digestive mucous membranes. He thinks ipecacuan emetics sometimes cut short the fever.

RENSHAW, C. J.—Brit. Med. Journ., Jan. 31st.

Records three cases of smallpox, not confluent, which were treated with decoction of *Sarracenia purpurea*, apparently with decided benefit. One had not been vaccinated. There was no pitting in any.

HALDANE.—*On the employment of Sarracenia purpurea in Smallpox.*
Edin. Med. Journ., Jan.

Haldane gave the decoction of the dried root to six patients, in whom the disease was unmodified by vaccination or a previous attack, and reports that no change whatever of any kind was produced. He regards the drug as utterly useless.

BOWEN, F., M.D.—Med. Times and Gaz., May 23rd.

Relates that he has found, after trials with many other remedies, nothing so successful for preventing the pitting after smallpox as puncturing the vesicles, from the fifth to the seventh day, with a needle dipped in a solution of Arg. Nitras, ʒss, ad Aq. ʒj. In twenty-four hours the vesicle has dried up, no itching or unpleasantness remaining. His first experience of this plan was in a case where one side only of the face was thus treated; the result being that while the unoperated side was deeply pitted, the other half was smooth and free from spots as before the attack.

MARSON, J. F.—Lancet, July 4th.

States that he made trial of the *Sarracenia purpurea* in 15 cases. He reports that he cannot say it had any effect whatever. It did not save life; it did not modify in the least the eruption of smallpox; it did not influence any of the secretions; it did not increase the flow of urine; in only one instance did it seem to act on the bowels, and this seeming effect might easily have been from other causes. All the cases died.

CROSBY, J. P.—Med. Times and Gaz., July 11th.

Gives a report of the recent epidemic of smallpox in Edinburgh. The number of cases was 350, of whom 45 died. The males were 189, the females 161. The most common age was from 20 to 25. The highest mortality occurred at ages from 30 to 50, and next under 5 years. Vaccination had been performed in 206, in many very imperfectly; the mortality among these was 4, and in 3, at least, there was a serious complication, as delirium tremens, puerperal mania, acute bronchitis. Of the 124 unvaccinated, 41 died, or 1 in 3; the ratio of the vaccinated being as 1 in 51½.

WILKS.—Med. Times and Gaz., Jan. 17th, 31st.

Gives some interesting "Notes on Scarlet Fever," in which he mentions a form of rheumatism which is apt to accompany the exanthemata. In this, as in ordinary rheumatic fever, there is hyperinosis of the blood, a tendency to deposition of the fibrine of the blood in the capillary system of the viscera and on the valves of the heart, and to endocarditis. Pyæmia does not appear to be the cause of this affection, but rather a peculiar state of the blood, in which some secondary poison has been developed. Another point which he notices at some length is the not unfrequent difficulty of diagnosis between scarlatina and measles; a child, for instance, having a measly rash, cough, wheezing, coryza, and the general aspect of measles, with also a swollen neck, an injected throat, and tumid, soft palate. Wilks is inclined to look upon such cases as belonging to a distinct affection, which, with Dr. Copland, he would term rubeola.

KENNEDY, H., A.B., M.B.—*A Case in which a Disease like Measles arose from an unusual cause, with Remarks.* Dublin Quart. Jour. of Med. Sc., 1863.

A boy, æt. 15, in perfect health, had a quantity of mouldy flax-seed meal thrown on his face, which got into his eyes and probably down his throat. He was at once seized with smarting and watering of the eyes, running from the nose, cough, and dyspnoea. His face soon became much swollen, eyelids and eyes very red, and the dyspnoea urgent. There was great excitement of the system. The following day he had, except the rash, all the look of a boy suffering from a sharp attack of measles, a disease which he had had two years before. He was treated by salines, tartar emetic, and blisters, and got well in three weeks. Kennedy finds that mouldy meal contains fungi, and refers to the researches of Dr. Salisbury, showing that straw fungi are capable of producing a form of measles, whether they are inoculated or inhaled. This American physician produced fungi, of which he gives drawings, by rendering straw mouldy. With these he inoculated some thirteen persons, the result being that, within two days, a disease exactly like measles in some, including the rash, followed. He has since found that similar inoculation acts as a prophylactic against ordinary measles. Kennedy concludes that in his case the symptoms were produced by the contact of fungi in the meal with the mucous surfaces, and thinks that fungi may play a considerable part in producing certain acute diseases of the throat and air-passages. He proposes in such cases the administration of emetics, which, by their direct effects, may cut short disease in its early stage. Dr. Salisbury's papers are in the 'American Jour.' for July and October, 1862.

FRÖLICH, REUSS, and other Wurtemberg physicians, state the following conclusions with regard to rubeola and measles ('Wurtemb. Corr. Bl.,' xxxii, 20, 1862; 'Schmidt's Jahrb.,' vol. 118, p. 187):—(1) The general symptoms in rubeola are for the most part very slight; fever is almost absent. (2) Catarrhal symptoms are present only in exceptional cases. (3) Rubeola affords no protection against subsequent infection from measles, and *vice versa*.

ZIEMSEN, H., KRABLER, P.—*Clinical Observations of Measles, especially with regard to the Temperature.* Greifswald Med. Beiträg., p. 117, 1863. Schmidt's Jahrb., vol. 118, p. 299.

The authors endeavoured to ascertain the course of the fever in measles, and to determine how far the disease conformed to a regular fixed type, also whether its departure occurred on critical days. They observed 311 cases during an epidemic which prevailed from August, 1861, to January, 1862. Their persuasion was that the mode of appearance and departure of the eruption afforded no sufficient criterion for classifying the cases; that the amount of fever was of much greater moment, and from this point of view they distinguish cases of slight infection, of grave, and complicated. The stage of incubation lasted, in accurately observed cases, thirteen or fourteen days. Especially in adults, it was attended with some fibrile excitement, depression and catarrh. The commencement of the disease was marked only in five cases by a rigor, in all the others there was

only that chilliness peculiar to catarrhal fever. Children, even when they were highly feverish, did not readily take to bed. The fever manifested considerable differences, which were as follows :—(1) The temperature rose on the first day to a considerable height, fell again to the normal, and increased again pretty rapidly about the time of the eruption. (2) Most usually, the temperature rises steadily from the normal figure, with more or less considerable morning remissions. (3) The temperature is very high on the first day, and maintains the same elevation with but slight remissions, till the appearance of the eruption. In this last condition there are unpleasant nervous symptoms, as somnolency, jactitation, delirium, which indicate a grave infection, and make the prognosis more serious. With the outbreak of the exanthem the temperature reaches its maximum. This acme of the fever is not fixed to a certain time; variations take place, which seem to stand in relation to an accelerated or retarded appearance of the exanthem. In the majority of all uncomplicated cases the acme happened at the beginning of the eruption, or at least within the first twenty-four hours after the appearance of the first spots. A maximum of temperature before the outbreak of the first spots was observed only in two cases, and even in these there was only an interval of a few hours between the acme of temperature and the eruption. A maximum of temperature after the first twenty-four hours of the eruption was met with only three times. The acme of the disease lasted in the great majority of all cases not more than twelve hours, in a few cases over twenty-four hours. When it was prolonged the disease was always severe. The following varieties were noted of the mode of decline of the fever:—(1) In the purest form of critical cessation of fever there occurs a rapid defervescence, which is complete in from twelve to twenty-four hours. The temperature sinks from the height of the acme rapidly and steadily down to or below the normal figure. This form of defervescence is the expression of a slight infection, which is less in proportion as the acme of the disease is brief, and the temperature does not rise high. (2) The next form is one of protracted critical termination. In the majority of cases there occurred pauses in the rapid defervescence, and the temperature sank below the normal figure, just as in croupous pneumonia. The pauses varied in length from twelve to thirty-six hours. The number of cases which manifested a critical termination of the fever was inferior to that of those which showed little or none. (3) The third form is that of incomplete crisis. The temperature falls at first rapidly, say 1.5° C. (2.7° Fahr.), in twenty-four hours; afterwards it falls gradually with remissions and exacerbations, so that it takes three days to reach the normal figure. (4) The last form is that of pure lysis, which is the rarest, where no critical change is observed. Transition forms are met with between this and the others, in which the course of the fever is quite irregular. The pulse frequency for the most part follows the changes of temperature, but differences between the two are not uncommon. With respect to prognosis, a fever which is uniformly high from the outset, with severe nervous phenomena, is of unfavorable omen, and so is a fever which runs high during the acme of the disease. A copious eruption is always more favorable under such circumstances than a scanty one. A rapid fall of the fever, after a short duration of the acme, with a rapid disappearance of the exanthem, is the most favorable course that the disease

can pursue. Increase of the temperature, unless it be of short duration, after it has begun to fall, indicates either a relapse or a complication. The most frequent was catarrhal pneumonia, which could not always be distinguished from croupous. It proved fatal especially in young children. Cold applications, according to Barthel's method, were found beneficial. Acute miliary tuberculosis and croupous pneumonia were the most frequent secondary or consecutive diseases.

SMART, W. R. E., M.D.—*On Epidemics of Yellow Fever in Bermuda.*
Brit. Med. Jour., March 21st.

The most intense manifestations of the disease have arisen in crowded barracks and convict-hulks, &c., especially when the healthy and the sick have been kept together. In the worst instances recorded it has been found that removal from infected localities has been always followed by an almost complete exemption of those not already affected, by amelioration of the state of the attacked, and, lastly, by an early extinction of the epidemic character of the fever. These facts show that the essential causes of the disease operate under ordinary circumstances by material local agencies, rather than by personal. During epidemics there has been always an epidemic constitution, manifested by the prevalence of catarrhal affections in the spring and of gastric affections in the early summer; these yielding to fever, which at its climax in the autumn assumed the type of yellow fever, with black vomit in a greater or less proportion of the attacks. Sanitary measures are the means to be relied on upon the approach of the epidemic constitution in any locality. When the epidemic has broken out, the only measure of certain value is removal from the locality. Smart thinks that the disease may be contagious, though this is not proved.

DESGUIN.—*Erysipelas of the Face in Intermittent Fever.* Gaz. Méd. de Paris, Nov., 1862. Brit. Med. Jour., March 7th.

In the autumn of 1861 Desguin observed a large number of cases of this kind. In every instance there was well-marked gastro-intestinal disorder. The erysipelas was earlier in its appearance in some cases than in others; in some it preceded the fever, in others it followed. Treatment by purgatives, followed by quinine, was successful.

MOORE, W. J.—Lancet, Aug. 1st.

Reports his experience in the treatment of malarious fever by the subcutaneous injection of quinine. He finds that four or five grains of quinine administered in this way are equal in their effects to five or six times that amount taken into the stomach; that the effects are more certain than when taken in the ordinary method; and that relapses are more rare. He uses a solution of 30 grains of quinine to 3ss of water, dissolved with ℥viii—x of Acid. Sulph. dil.

POOR, E.—*Dyskrasia Malarica, and its causal relation to Acne, Furuncles, and Anthrax.* Prag. Vjhrschr., lxxvii, p. 17, 1863. Schmidt's Jahrb., vol. 119, p. 183.

Poor's observations were made in the malarious districts of Hungary. He states—(1) that febrile dyscrasia and the above-mentioned cutaneous

affections occur in the same localities, and (2) also during the same periods of time. (3) Both affections have the same prodromata. (4) The phenomena of both are more or less similar. (5) Acne and furuncles are chronic, like the febrile dyscrasia; carbuncle is acute and perilous, like a pernicious intermittent. (6) The same remedies are successful in both species. (7) The pathological changes are in many respects similar. (8) The same morbid process is probably concerned in the genesis of these disorders. The author supposes that the decaying blood-cells in malarious cachexia give rise to pigment-granules, which, being arrested in the cutaneous capillaries, produce acne, furuncles, and anthrax, according to the greater or less vital power of the individual.

CHASSAGNE.—Gaz. des Hôpit., 62, 1863. Schmidt's Jahrb., vol. 119, p. 297.

Relates the case of a soldier in Algeria, who on five separate occasions had two paroxysms of intermittent fever, the second being succeeded by a copious eruption of herpes labialis and of furuncles on the limbs, which appeared to be critical, and put an end to the disorder for the time. No quinine was taken.

WISE, T. A., M.D.—*On the Hamostatic Treatment of Cholera, Hæmorrhage, Exhaustion, &c.* Dub. Quar. Journ. of Med. Sc., Aug., 1863.

The object of this communication is to recommend the use of the tourniquet during the cold stage of ague, in choleraic collapse, and similar states. He states—(1) By its obstructing the circulation, it immediately stops the distressing cramps of the extremities in cholera. (2) By increasing the quantity of the circulating fluid in the trunk, and thereby stimulating the heart's action, it removes morbid congestion, stops the secretions from the bowels, increases the animal heat, and powerfully tends to restore health. (3) By improving the vigour of the system, medicines act more powerfully, and in a more salutary manner, in removing morbid actions. (4) When the reaction has taken place, by loosening the tourniquets with care, the determination of blood to the internal parts is diminished by its diffusion over the extremities upon which the tourniquet had been placed. They are immediately to be retightened when there is any coldness or weakness experienced, or any tendency to relapse. This must be most carefully watched for and prevented. (5) By increasing the volume of blood in the contracted circulation, the force of the heart is increased, local congestions are removed, and the whole system is strengthened.

DONALDSON, J., M.D.—*On the treatment of Fever.* Madras Quart. Jour. of Med. Sc., April, 1863.

Donaldson has made trial of cobweb in the treatment of intermittent, remittent, and common continued fever in India, and reports very favorably of it. The dose is gr. v, in pill, *ter die*, or oftener. It may be given advantageously during the paroxysms as well as in the intermissions; and, as Donaldson himself testifies from personal experience, quickly and gratefully relieves the almost insupportable headache and restlessness of an acute attack. In quartans and other inveterate forms of fever, which

have resisted daily repeated ʒj-doses of quinine, the good effects of cobweb are most conspicuous.

NEWMAN—*On Diphtheria.* Brit. Med. Jour., Feb. 28th.

During the last six months of 1861, Newman observed 18 cases (10 males and 8 females), two of whom were under the age of 10, 7 aged 10—20 years, and 9 older. One died, a child, æt. 4, from direct affection of the larynx. One case had partial paralysis of both lower extremities, sensation being more damaged than motor power. In one case, almost from the very commencement, there was excessive sickness. Absolute repose, maintenance of general power, and the local application of Beaufoy's chloride of soda, with a large brush, twice or thrice daily, are the most useful remedial measures. In the severer cases he advises one application of H. Cl.

STOKES.—Dub. Jour. Med. Sc., Feb., 1863.

Exhibited to the Pathological Society the pharynx and respiratory organs of a patient dead of diphtheria. The point of interest was that the tongue, tonsils, pharynx, epiglottis, larynx, trachea, and right bronchus, were more or less thickly coated with the deposit, even as far as the fourth or fifth bronchial ramification, while the left bronchus remained quite free from it. The right lung was œdematous and consolidated, the left comparatively healthy.

JAFFÉ, MAX.—*Report on Diphtheria in its epidemiological and nosological relations.* Schmidt's Jahrb., vol. 119, p. 236.

This is a continuation of the former report on the same subject (Schmidt's Jahrb., vol. 113, p. 96). We can only notice some of the more important papers. Weber, H. ('Virchow's Archiv,' xxv, p. 114, 1862) relates seven cases of consecutive paralysis, concerning which he expresses the opinion that it depends on a primary peripheral alteration of the nerves, of which we have no exact knowledge, and which our present means are insufficient to investigate. This is propagated from the originally affected part to the spinal centre, much in the same way as in tetanus the irritation is transmitted from the wound. Roger ('Archiv. Gén.,' Jan., Feb., April, 1862) gives a detailed account of clinical inquiries respecting diphtherial paralysis, with statistics respecting croup. His first section treats of the frequency of paralysis in diphtheria, which is shown by comparative figures (v. 'Year-book,' 1863, p. 82) to be very greatly above that observed in other acute diseases. The second section contains a summary of the various cases of paralysis. There were altogether 36 cases, of which 27 belonged to the throat and soft palate (16 of these terminating fatally); 7 cases of general paralysis ending in recovery, and 2 ending fatally. Most of these cases were from 4 to 6 years old; the next largest number were between 2 and 4, and the third between 6 and 8 years. Of 38 cases, 21 belonged to the female and 17 to the male sex. No season of the year had any special effect in inducing the disease. The localization of the primary diphtheria in 12 cases was pharyngeal, in 23 was laryngeal (croup), and in 2 was cutaneous. In the 12 pharyngeal cases paralysis of the velum palati occurred ten times; once there was palsy of the sphincter ani, and once there was amblyopia. Four out of the

10 cases of velum paralysis were uncomplicated, 4 had extensive paralysis, and 2 had paraplegia. In the pharyngo-laryngeal cases, denominated croup, there was almost invariably paralysis of the pharynx; in one there was general paralysis, and in one general weakness and persistent aphonia. Besides these, there was also a case of palatal paralysis in a child, who had had diphtheric exudation in the mastoid region and in the external auditory meatus. The same paralysis associated with paraplegia occurred in a little girl who had suffered from cutaneous diphtheria, without having had the least trace of exudation in the throat. Only in two instances did the paralysis notably affect the rectum and bladder. In one patient the sphincter ani alone was paralysed; in the other, both sphincters were affected, and there was also paraplegia. Among all the cases only one presented notable disorder of the visual apparatus, and in this the amblyopia was the sole sign of paralysis, and there was no albuminuria throughout. The first appearance of paralysis occurred at very different periods, and with the greatest variations in them. Nothing accurate could be made out respecting the mode of development of the paralysis, or the order in which the several forms occurred. The duration of the paralysis was very various, and did not appear to depend on any peculiarity in the situation of the primary disease, or of itself. The intercurrent diseases, broncho-pneumonia, pleuritis, measles, &c., seem to exercise no important influence on the course, the severity, or the termination of the palsies. The prognosis is generally favorable, and the palsy is only dangerous when it affects the respiratory muscles, and aggravates thereby an intercurrent pneumonia, when the dysphagia makes it necessary to feed the patient with an œsophagus-tube, and the system is depressed by inanition as well as by the original disease or when in very young children there is paralysis of the velum palati, when sudden death by suffocation may ensue during attempts at swallowing. The most important remedies are tonics and local galvanism. The third section deals with statistics, no distinction being apparently made between simple, inflammatory, and diphtherial croup. During 1859 and 1860 there occurred altogether in the children's hospital 441 cases of diphtheria, among which there were 362 cases of primary or secondary croup. About one fifth more girls were affected (in these years) by diphtheria than boys; in former years the contrary was the case. Of the 213 cases, 14 were 1 to 2 years old, 85 from 2 to 4, 68 from 4 to 6, 20 from 6 to 8, 15 from 8 to 10, 8 from 10 to 12, 1 about 14, 1 about 16, and 1 over 16 years of age. The colder months of the year, especially the first four, produced the largest number of cases. In January there were 25, in February 21, in March 26, in April 21, in May 18, in June 14, in July 12, in August 15, in September 14, in October 15, and in November and December 17 in each. In 60 cases no contagion could be detected in 25. On the other hand, 17 children who were in the hospital with various acute or chronic diseases contracted diphtheria while in the wards. In 18 instances one or more persons suffered with pseudo-membranous affections at the same time or a little before, in the locality, house, or family, from which the little patients came. The conclusion is, that diphtheria may be developed spontaneously or as the result of infection. Among the above-mentioned 215 cases there were 54 of pharyngeal diphtheria, 154 of simple croup (laryngeal

diphtheria), or of the latter complicated with pharyngeal, and 5 cases in which the disease appeared in some region of the body without attacking the throat or larynx. In 1859 there were 2 cases of cutaneous diphtheria, 21 of pharyngeal, 208 of laryngeal, simple or complicated. The total number of cases in the two years being 446; the total deaths were 310, nearly the same number in both years. Laryngeal diphtheria was much the most fatal form. Of 54 cases of pharyngeal only 24 died, while of 362 cases of laryngeal 330 died. Two hundred and ninety-four patients were tracheotomized, of whom only 65 recovered. Most of the fatal cases died very early after the operation; more than half sank before the fourth day. The causes of death were chiefly pneumonia, either simple or complicated with bronchitis, inanition, resulting from diphtheric intoxication or from the misuse of antimonials, convulsions, suppurations in the mediastinum, gangrene or erysipelas of the edges of the wounds, and, lastly, emphysema, subpleural, or subcutaneous. Of 67 cases of croup which were not operated on, 45 died. Excluding the hopeless cases, in which no operation was performed, the experience of the Hôpital des Enfants Malades, for three years, shows that the chance of recovery for cases which would otherwise certainly end fatally is about 19 or 20 in 100. Küchenmeister ('Oesterrh. Ztschr. f. prakt. Heilk.,' 13, 15, 1863) has examined the effects of many local applications on diphtheric exudations removed from the body. He finds lime-water the most effectual. It quite dissolves the membranes in ten to fifteen minutes, and long before that time makes their texture loose and easily broken up. In slighter cases this remedy alone may be sufficient; but in all the severer, caustics, as argenti nitras or muriatic acid, are indispensable. In cases of smart angina of the throat and tonsils the local application of lime-water, by frequent gargling or brushing, and the internal administration of nitrate and carbonate of soda, prove speedily curative. The same report contains a notice of a gangrenous affection of the fauces, which was observed by R. F. Browne ('Amer. Med. Times,' Nov., 1862). It prevailed among weakly and depressed men, reduced by the prevailing malarious fever, but did not attack the wounded. The throat was the only part affected; there was no trace of inflammation, the disease came on imperceptibly, without pain, or sense of constriction, or dyspnoea (except in one case just before death). In none of the cases was there any pulmonary or hospital gangrene or scurvy. The disease was solely the result of lowered vitality. The muscles, especially the tissue of the heart, were found after death flabby and anæmic.

MENSCHEL & BEIGEL.—On *Malignant Carbuncle (milzbrand)*. Preuss. Ver. Ztg., N.F.V. 23, 28, 1862. Schmidt's Jahrb., vol. 117, p. 41.

Menschel observed twenty-four cases, most of whom were taken ill after partaking of the flesh of diseased animals; the others were infected by communication of the poison. In the former the carbuncle appeared on the eighth to the tenth, in the latter, on the third to the sixth day. None of the attendants were infected by the sanies of the ulcers, although several were soiled by it. Several of the cases died, others recovered in seven to forty-one days. Treatment consisted of emetics, acids, alkalies, and caustics, locally. Beigel found chlorine, apparently both externally and

internally, of benefit. He lays down the following general conclusions:— (1) Malignant carbuncle (or pustule) never appears spontaneously in the human subject, but is always occasioned by contact with a diseased animal. (2) Infection only occurs when a wound or an excoriated spot comes in contact with the flesh, blood, excrements, saliva, or moist hide of a diseased animal. (3) The contagion is destroyed by boiling heat. Meat, therefore, from a diseased carcass, after being well boiled or roasted, may be eaten with impunity. (4) The prognosis in most cases of the disease is favorable. (5) Cauterizations, or removal of the diseased structure by the knife, is of no avail four or five days after the formation of the characteristic pustule.

EDMUNDS, J.—*Case of Malignant Pustule.* Med. Times and Gaz., Jan. 31st.

A healthy male, æt. 50, went to bed perfectly well between 10 and 11 p.m. At midnight he was seized with a rigor, and at 3 a.m. his tongue was greatly swollen. At 11 a.m. his countenance indicated considerable distress and profound toxæmia; there was considerable swelling in the sublingual space, pushing upwards the tongue, which, as well as all the surrounding parts, was natural; the swelling was soft and yielding. The patient was very feeble, his pulse weak, his voice husky. Three or four days before, he had eaten some jugged hare, which was high, and had had at the same time a sore from a bad tooth beneath the tongue, where some of the meat lodged, and through which putrid infection might have occurred. The sublingual mass was deeply incised, but did not cut in the least like carbuncle, rather like soft flesh; no pus exuded, and no bleeding followed. Iodine was applied on lint, large doses of carb. ammonia given, with champagne *ad libit.* At 10 p.m. there was some improvement, but at midnight exactly, a second rigor occurred, the swelling increased enormously and there was a profuse blackish discharge. Death occurred at 3 a.m. Edmunds remarks that the case materially differs from those of malignant pustule.

BUDD, W., M.D.—*Observations on the occurrence of Malignant Pustule in England, illustrated by numerous fatal cases.* Brit. Med. Jour., Jan. 24th, 31st, Feb. 14th, March 7th. (v. 'Year Book' for 1863, p. 51).

FLINT, A.—*A Contribution toward the Natural History of Articular Rheumatism, consisting of a Report of 13 Cases treated solely with Palliative Measures.* Amer. Jour. of Med. Sc., July, 1863.

In all the cases the patients had small or moderate doses of opium, dry flannel to the affected joints, with liniments of opium, aconite, or camphor. All but one had tincture of quassia, largely diluted, internally, as a placebo; the exception had gr. ij of quinine daily. In all but two cases the disease was acute, in two it was subacute. The duration of the disease, from the date of its attack to convalescence (excluding the case complicated with pericarditis and pneumonia), varied between 12 and 56 days. The duration was under 15 days in 3 cases, over 15 and under 20 days in 1 case, between 20 and 25 days in 3 cases, between

25 and 30 days in 3 cases, and in the remaining 2 cases the duration was in one case 45, and in the other 56 days. The mean duration was a small fraction under 26 days. The duration from convalescence to the date of discharge, or complete recovery, varied from 5 to 27 days. The mean duration was a fraction over 16 days. The time in hospital varied from 12 to 50 days, the mean being a fraction over 30 days. These results go to show considerable diversity as regards the intrinsic tendency of the disease to end after a certain period. They show, however, that the disease does end from self-limitation after a duration varying in different cases. They go to show also that the mean duration without curative treatment cannot greatly exceed the average length of the disease when active measures are employed with a view of controlling it. Under the head of the number of joints affected, after detailing those that were affected in each case, Flint states that he does not think that his cases were worse off than those treated in the usual way; and with regard to the intensity of the articular affection, he holds the same opinion. An endocardial or bellows murmur existed in 11 of the 13 cases; but as it was limited to the base of the heart in all but 3 cases, Flint does not consider that it resulted from endocarditis. He thinks that such a murmur will be found in the majority of cases, especially in females (all Flint's were females but two), if a careful examination be made with Camman's stethoscope. He has also been led to doubt whether a murmur at the apex and over the body of the heart, developed in the course of rheumatism, is to be regarded in itself as sufficient evidence of endocarditis. A murmur in these situations may be developed and disappear during convalescence; this was observed in one of the 3 cases in which a murmur existed at the apex. There is reason to believe that murmurs here, as well as at the base, may be of hæmic origin. To be evidence of endocarditis, a murmur must be mitral, developed under observation, persisting and having a certain degree of intensity, and it should be associated with pain or uneasiness in the precordia, tenderness, and greater disturbance of the heart's action than is consistent with the febrile movement belonging to the rheumatism.

BOUCHUT—*Jour. de Méd. et de Chir. pratiqu.*, Aug., 1863.

Relates the case of a child, æt. 5 years, who had hydrothorax of the right side, followed by acute articular rheumatism. The child was treated with a combination of veratria and opium, about one tenth of a grain of each, in a pill; two of which were given the first day, three the second, four the third. In four days the pulse had fallen to 56, and the hydrothorax and the articular pains had completely yielded.

FULLER, H. W.—*Clinical Lectures on Gout, Rheumatism, Rheumatic Gout, and Sciatica*. *Lancet*, Jan. 24th, 31st. Sept. 26th.

In subacute rheumatism Fuller gives guaiacum, Pot. Carb., Pot. Iod., and Pot. Acet. In cases of inactivity of the skin and liver hot-air baths and mercurial purgatives are essential. In cases of exhaustion tonics must be administered. Chronic rheumatism Fuller believes is often dependent on a different materies morbi from that which gives rise to acute rheumatism, and its treatment must consequently be different. Periosteal

nodes, according to Fuller, occur in persons who are always cachectic, and who commonly have suffered from syphilis or have had their systems saturated by mercury. He recommends in such cases, besides support and bark, Pot. Iodid., with a little biniodide of mercury, the latter being held in solution by an excess of the potassium salt. In gonorrhœal rheumatism also he finds the same medication very efficacious, taking care to arrest at the same time, the urethral discharge, if it still exist. When the joints remain thickened, painful, and stiffened, Fuller finds the best treatment to consist in cold douching to the parts, followed by rough friction, and then enveloping them in lint steeped in the following lotion:—Tinct. Iod. co. ζ ss, Glycerinii ζ iiss, Aquæ ζ iiij; M. This causes no cutaneous irritation, and ensures a constant absorption of iodine. With regard to rheumatic gout, Fuller expresses a decided opinion that it is a disease *sui generis*, totally distinct from gout and equally so from rheumatism; indeed, it seems to him to resemble scrofulous inflammation more nearly than rheumatism in its nature. Pathological research has shown that in the earliest stage of the disease the capsules of the affected joints are distended with fluid, the synovial membrane is thickened and intensely vascular, and vascular tufts exist at the margins of the cartilages; that as the disease progresses the fluid is absorbed as well as the interarticular fibro-cartilages, and eburnation of the articulating surfaces takes place; that the heads of the bones become enlarged and altered in shape by the occurrence of interstitial absorption in some parts and of irregular osseous deposits in others; and that foreign bodies, of varying consistence and character, are often developed both within and without the joints—bodies which are sometimes cartilaginous, sometimes bony, sometimes attached by longer or shorter pedicles to the synovial membrane or to the ligamentous structures, and at others are loose within the joint. It has shown that these changes may take place slowly, without any general febrile disturbance or any acute local inflammatory action; and, on the other hand, that they may be preceded and accompanied by fever, and by pain, heat, and inflammatory swelling of the parts; that the bursæ and sheaths of tendons in the vicinity of the affected joints are prone to be implicated in the mischief, but that neither in the joints nor in the adjacent bursæ or sheaths of tendons are any of the ordinary products of inflammation found—there is no lymph, and no pus, and no urate of soda, as in gout. In other words, it has shown that the characteristic changes which occur in the joints as the result of rheumatic gout take place independently of active inflammation, and that the acute inflammatory action which sometimes precedes or accompanies these structural changes is simply a complication of the disorder, and by no means necessary to its perfect development. These structural changes occur not in the robust, the well- or over-fed, but are more common in women than in men; very frequently arise in persons who lead a temperate life and are small eaters; and never present themselves in persons who are constitutionally sound, unless they have been subjected to some cause of nervous exhaustion and enfeebled health. The offspring of consumptive parents, especially weakly women; men rendered cachectic by excessive venery or syphilis, mental strain, anxiety, or over-fatigue, are most liable to suffer from this disorder. In women the disease is often traceable to the cachexia entailed by perversion of the uterine functions,

and it is a common sequel of over-suckling. Fuller considers the disease to be owing to a blood poison, but this, as shown by Dr. Garrod, is not uric acid. The diagnosis is not easy; it chiefly turns on the following points:—The less degree of active pyrexia, the absence of a marked rheumatic odour, the implication of a large number of joints, especially the smaller ones, simultaneously, the persistent character of the inflammation, and its non-tendency to produce disorganization of the joints. When the disease assumes from the first a chronic form, its features are much more distinctive. The patient is weak and languid, often chilly, but perspires on the slightest exertion; the urine is pale and clear, and the spirits are depressed. In the more advanced stages of the disorder depression of spirits, constant clammy moistness of the skin, and the implication of an extraordinary number of joints, are the most striking phenomena. The form also of the articular swelling is such as cannot possibly be confounded with the effects of rheumatism. It is obviously due, in great measure at least, to enlargement of the extremities of the bones themselves, and not merely to effusion within their capsules or to thickening of the surrounding structures. Great distortion of the fingers often ensues. Fuller sums up the principal facts bearing on the treatment of the disease as follows:—(1) The malady originates in mal-nutrition, resulting not unfrequently from some hereditary infirmity of constitution, but sometimes in connexion with cachexia induced by a variety of causes which exhaust the nervous system. (2) That the local changes to which it gives rise are essentially distinct from those produced by active inflammation, and more nearly resemble the results which might be expected from a slow perversion of nutrition; indeed a similar tendency to the formation of exuberant osseous growths around the joints, while the articular textures within are suffering destruction and decay, is observed in malignant disease of the joints and in various strumous affections of the joints, both of which are connected with a constitutional taint. (3) That whether in an acute or in a chronic form, the malady is one and the same, due to the same cause, connected with a similar failure of tone in the system, and productive of similar changes in the joints; the only difference being that in the former they occur more rapidly than in the latter. According to these views, treatment must have for its object the sustentation of the general health and the restoration of tone to the system. The local irritation of the joints may be relieved meanwhile, but the remedies which are most serviceable in rheumatism and gout are of little avail in this form of disease. Colchicum, iodide of potassium, guaiacum, hot baths and vapour baths, if prescribed with a view to eradicate the disease, prove mischievous rather than beneficial. By depressing and enervating the already feeble patient, they establish the disorder which they were given expressly to get rid of. If these remedies are used at all it should be as alteratives in conjunction with tonics. In the acute stage of the disorder it may be necessary for a few days to administer alkalies and alterative doses of blue pill or calomel, and to restrict the diet to broth or beef-tea; but when once the true nature of the malady has declared itself, the more successful plan in the majority of cases is, notwithstanding the acute character of the symptoms, to administer bark or quinine in combination with small doses of alkalies, and, as soon as possible, to interpose

and check the continuance of the enfeebling clammy perspiration by means of a cold shower bath or dripping sheet. The latter means are of excellent service if reaction follows their employment, and may be seconded very beneficially by the cold douche applied to the affected joints. Mere affusion is not sufficient; the stream has not sufficient force, and its action is not sufficiently sustained. If the secretions are in good order, tonics may be given full play, and a generous diet allowed. Fuller has a very high opinion of the virtues of strychnine as a tonic when there is great depression of the nervous system. The mineral acids he thinks also very valuable in this and in other diseases of an atonic character, but they should be given in larger doses than is usually the case, as from $\text{m}\nu\text{j}$ to mx . Further, he is satisfied that in cases of rheumatic gout turbidity of the urine is not a bar to their administration. If, indeed, they produce deposits of lithates and dyspepsia, they must be omitted; but when the urine is habitually turbid, they often render it clear.

BIRKBECK NEVINS, J., M.D.—*On the treatment of Rheumatic Fever.* Brit. Med. Jour., Aug. 1st.

He advocates quinine gr. viij + Pot. Iod. $\mathfrak{D}\text{j}$, daily, in four doses, from the first; and the steam bath, with subsequent cold sponging, and, as an adjunct, opium in small doses, when necessary, to produce sleep. Nevins has used this plan very largely for fifteen years, both in private practice and in public, and has not had one case of distinct cardiac affection. O'Bryen, 'Brit. Med. Jour.,' Aug. 22nd, finds the hot-air bath for the thin and aged, and the steam-, with or without the addition of sulphur, for the young and plump, followed by cold douching, equally effectual without the quinine and Potas. Iod.

CHAMBERS, T. K.—*Statistics of the treatment of Rheumatic Fever.* Brit. Med. Jour., Aug. 29th.

Of 26 cases treated with $\mathfrak{3}\text{j}$ of Pot. Nitrat., *ter die*, the mean stay in hospital was forty days. Of 341 treated with bihoral doses of $\mathfrak{D}\text{j}$ of Pot. Bicarb., the mean stay was 34.3 days. Of 33 treated with a less quantity of the same, forty days. Of 11 treated without drugs, except a little opium occasionally, thirty days. Of the 26 treated with Pot. Nitras., 5 were attacked with heart disease while under treatment, and 4 died. Of 174 treated with Pot. Bicarb., 9 had inflammation of the heart, and none died. Of 63 either bedded in sheets or who had wilfully thrown off their blankets, 6 contracted newly pericarditis at least, if not endocarditis as well; 3 had a relapse of pericarditis on old cardiac disease; 1 had endocarditis alone; nearly 16 per cent. had inflammation of the heart, and 4 died. Of 180 in blankets, none contracted pericarditis, none died; 1 had a relapse of pericarditis on old cardiac disease; 5 had endocarditis alone (one of them accidentally from a wetting during convalescence); 1 a relapse of endocarditis on old cardiac disease. Not 4 per cent. have had inflammation of the heart. When it came, it was of a milder character, and was generally to be accounted for by some imprudent exposure. That is to say, that bedding in blankets reduces from 16 to 4, or by a good three quarters, the risk run by patients in rheumatic fever.

WADE, W. F.—*On the treatment of Rheumatic Fever.* Lancet, Oct. 10th.

Wade thinks that when delirium occurs in this disease it is from a deficiency of fibrine in the blood. In the cases where he has met with delirium the disorder has generally supervened upon diarrhœa, and has yielded under the free use of stimulants. He uses alkaline treatment, but recommends also the administration of two to four grains of quinine every three or four hours, as soon as ever there is a distinct remission in the symptoms. This occurs in from twenty-four to seventy-two hours after the commencement of the treatment. The nitrate and acetate of potash are continued night and morning. On the same day that the quinine is commenced, or on the next, meat and wine are allowed. After the rheumatism is gone he gives iodide of iron.

WILKS, S., M.D.—*On the Syphilitic Affections of Internal Organs.* Guy's Hosp. Reports, 1863.

Wilks observes that in syphilis there is a tendency to the effusion of a low form of lymph or albumino-fibrous material in nearly every tissue of the body, occasionally modified in character to a slight extent by the organ in which it occurs. He thinks the distinction between secondary and tertiary symptoms is not well founded, and believes that the internal depositions occur at the same time as the external. What is called primary syphilis is not syphilis at all. Various morbid changes occur as sequelæ of syphilis; but as they may be induced by other causes, they are not truly syphilitic. Such are caries and necrosis, disease of the cartilages of the larynx, the lardaceous or waxy disease. Both true syphilitic alterations and non-specific sequelæ may exist in the same subject. The action of mercury is highly beneficial in the former, but is eminently pernicious in the latter. Thus in true syphilitic caries mercury is useful; but if disintegration commences, above all remedies it would be harmful. The deposits take place in muscles by the exudation of a soft albuminous matter, which infiltrates the tissue, and subsequently becomes firmer. In the liver the same process occurs, and leads to the formation of fibrous nodules, which shoot out their fibrous rays into the surrounding hepatic tissue. The syphilitic deposit is characterised by its general appearance and the attendant circumstances more than by any minute structural peculiarity. He gives cases illustrating the occurrence of deposits in the various viscera, which were more or less certainly syphilitic. With regard to the brain, he says, "the majority of cases which have come under my own notice have been of the following kind. The dura mater is intimately united to the brain by adhesions of the serous surfaces; and this not by cellular tissue, but by a hard, yellow substance, sometimes of great consistence, and destroying or involving the cineritious matter or encroaching on the medullary. In some cases the dura mater was externally adherent to the bone, and the latter was carious. When the skull is not involved, it is probable that the deposit first takes place in the arachnoid, and, indeed, in the liver and other organs the deposits all occur towards the surface, and their capsules are very seldom free. With regard to bone, there is a disposition in syphilis to the production of an albuminous product beneath the periosteum and in the vascular canals of

the bone. This may ossify, producing enlargement or hypertrophy of the part; or if ulceration takes place, a caries results.

OPPOLZER.—*Syphilis of the Liver*. Wien. Med. Halle, 24, 27, 1863. Schmidt's Jahrb., vol. 120, p. 309.

After relating a case, Oppolzer notices the diagnosis of this disease from cirrhosis, cancer, and colloid infiltration. Cirrhosis is to be distinguished by the diminution of size, the unevenness of surface, and the history of spirit-drinking. From cancer it may be distinguished by the previous symptoms and the age, though not with certainty. The existence of colloid infiltration (waxy degeneration?) is made probable by the presence of tubera in the liver, and slight jaundice, considerable swelling of the spleen, and the previous occurrence of ague. Oppolzer himself has mistaken cases of syphilis of the liver for cancer, and published them as cures. The best remedy is Pot. Iod.

DIDAY.—*On the Natural History of Syphilis*. Gaz. des Hôpit., 30, 33, 36, 1863. Schmidt's Jahrb., vol. 120, p. 56.

Diday would restrict the term chancre to the hard form, would apply the term "chancelle" to designate the soft, and chancroid to the sore produced in those already syphilized by the pus from indurated ulcers. He believes that every instance of acquired syphilis commences in the same way; that the disease may get well without specific treatment, or relapse after such treatment, even when it has been conducted in the best manner; and that there is no necessity for syphilis to advance to the tertiary period. These differences depend on the degree of intensity of the disease, and this again depends on the quality and mode of communication of the poison, and on the age, temperament, and habits of the infected individual. Inherited syphilis is, he thinks, much more intense than acquired. Primary affections, which are less easily communicable, produce also slighter forms of syphilis; thus, broad condylomata cause slighter disease than chancres. In the case of the infecting, indurating chancre, incubation lasts, on an average, fourteen days; in infecting flat tubercles twenty-nine days. Between the primary affection and the appearance of the first constitutional symptoms there is an interval in the case of chancre of fifty-seven, in the case of flat tubercles of seventy-four days. It is not rare for the (indurated) chancre to be neither indurated nor excoriated. The form it presents may not be the same as that of the chancre from which it is derived; it rather depends on the individuality of the recipient. Alopecia, emaciation, and loss of ability for work, are the usual prodromata of constitutional symptoms. A simple roseola or an acne-like eruption on the head indicate that the syphilitic disorder is slight; while an impetiginoid eruption, and a grayish, diphtheritic, and ulcerating appearance of condylomata, betoken a grave disease. Recrudescences, not relapses, indicate a greater intensity of syphilis, in proportion as they return more frequently and more early. With regard to treatment, Diday warns that we must not expect to eradicate the disease, but only to suppress its phenomena. He advises mercury to be used in actually indurated chancre, in recrudescences (as syphilitic eruptions, or iritis), and in hereditary syphilis. It is to be given as long after the

symptoms have disappeared, as it had to be given before this event. The patient's general health and strength should be promoted as much as possible.

MARSTON, J. A., M.D.—*Observations upon Syphilis in its manifestations as a Constitutional Disease.* Med.-Chir. Trans., vol. xlv, p. 83.

Marston remarks that a cutaneous syphilide, extensive but superficial, denotes a milder degree of constitutional infection; while the discrete and localized morbid processes, affecting the deeper tissues of the skin and mucous membrane, have the opposite character of a severe degree of syphilitic infection. To the question what relation the severity of the primaries has to those of the later symptoms, Marston replies—(1) that the greater the induration, and the longer the period during which primaries remain unhealed, the more certain will be the severity of the constitutional infection; (2) that the amount of ulceration, &c., of the primary sore stands in some relation to the worst and more intractable forms of secondary affections—*e.g.*, the pustular, ecthymatous, rupitic, the unhealthy ulcerations, nodes, and gummatous tumours. Constitutional syphilitic disease often shows itself after years of latency during convalescence from some other disorder, as pulmonary, or some endemic complaint. Several cases are related of intra-cranial syphilitic affection, in which the cerebrum appears to have been decidedly involved. He notices also the occurrence of cases in which the symptoms of pulmonary phthisis were very marked, but in which the appearance of syphilitic disease, with or without specific treatment, coincided with remarkable improvement. With regard to the influence of a warm climate upon cases of constitutional syphilis, Marston states that the Mediterranean climate is most mischievous during the warmer six months of the year. Over and over again, during the hot months, symptoms of constitutional syphilis have refused to yield to any treatment until the winter set in, and as frequently almost they proved so intractable as to require invaliding to Great Britain, where the patients regained their health often rapidly, without any treatment, or with the aid of the same measures as had failed entirely in the relaxing climate of the Mediterranean.

DIDAY, P.—*On renewed Syphilitic Infection.* Arch. Génér., July, Aug., 1862. Schmidt's Jahrb., vol. 120, p. 194.

As a rule, syphilitic contagion does not affect the same individual twice. But if a person has recovered from a previous syphilis under treatment, he may contract a second by fresh exposure to contagion. Diday has observed twenty cases of this occurrence in his own practice in the course of six years. The minimum period for the complete cure of syphilis he puts at twenty-two months.

REUMONT.—*Deutsche Klinik*, 16-18, 1862. Schmidt's Jahrb., vol. 120, p. 196.

States that his experience during the last four years has confirmed his previous as to the effects of the sulphurous thermæ of Aix-la-Chapelle in syphilis. He finds that they have no specific action against constitutional syphilis, but that in some cases they cure the so-called residuary

affections, especially the cutaneous. (2) That they are an aid to diagnosis in doubtful cases of syphilis, and educe manifest symptoms when none such exist. (3) That they form an excellent preparation for fresh anti-syphilitic treatment, and, in combination with mercury or iodine, cure many diseases, especially of the osseous system. (4) That by themselves alone they are able to remove mercurial disorders continuing to exist after the cessation of syphilis.

DIDAY.—Gaz. Médicale de Lyons. Edin. Med. J., April, 1862.

Remarks that tertiary syphilis is a distinct pathological stage, differentiated by its clinical characters, its prognosis, and treatment, from secondary syphilis. Tertiary cannot be produced at pleasure, nor can we foresee the cases in which it will occur; in general, it continues and perpetuates itself in spite of every remedy; finally, its lesions are not contagious. If we compare the two groups, it will be seen that the characters of secondary syphilis belong to the class of virulent affections, or inoculations by morbid secretions, (such as vaccinia and the eruptive fevers), while those of tertiary syphilis belong to the class of diatheses (such as some skin diseases and rheumatism). This transformation from an intoxication into a diathesis is not owing to an excessive duration of the secondary period, nor to the absence of specific treatment, but on the one hand to the variable strength of the original virus, and especially to the variable degree of resistance which the organism of different patients opposes to the action of this virus. Individuals originally endowed with little vital resistance, or in whom the power of resistance has been enfeebled, whether by age or by dyscrasie—whether by privation of pure air, of proper food, of sleep—whether by the effects of errors of regimen or the depressing passions—these are the persons in whom we most often see syphilis assume the permanent form, and take on the characters of a diathesis. Mercury fails almost invariably, iodine does but palliate. To cure, if it be possible, a diathesis, requires not less than the prolonged action of all reconstituent influences, requires not less than a radical and durable change of alimentation, of residence, sometimes of profession—in short, of all the habits, whether social or moral.

PIHAN-DUFEILLAY.—*On the Alterations of the Internal Organs produced by Syphilis.* L'Union, 61, 108, 111, 114, 1862. Schmidt's Jahrb., vol. 118, p. 41.

From two cases, one reported by himself, the author takes occasion to make the following general remarks. In both the remarkable phenomena were the highly developed syphilis, the induration of the wasted or enlarged glandular organs, and the circumscribed knots in their tissue. The enlargement of the liver must be regarded as the first stage of the disease, its atrophy as the second, as is also determined by periodic examination of the living subject. The same is true also of the other organs. The characteristic feature of the alteration consists in the growth of normal cellular tissue, and wasting of the other tissues. A diagnosis can only be founded upon the antecedents, and upon the existing cachexia. The earthy tint induced by the latter gives no indication of the liver being diseased; it is quite different from the icteric tinge, and

does not depend on the degree of disturbance of the liver. The indented cicatricial patches on the surface of the liver are produced by the shrinking of the connective tissue, and are found even where there is extreme atrophy. The gummatous tumours of the lungs are characterised by a stiff, thick, fibrous envelope, which causes puckering of the surface, from whence fibrous bands run into the interior of the lung. Next to this envelope comes a gray, hard substance, forming one or more nuclei, which gradually softens, and becomes at last cheesy or almost fluid. The firm as well as the liquid mass consists of fibrous tissue, cells, and fat-globules. The tumours of the liver and areolar tissue have the same contents. The pulmonary formations always appear late, and belong to the tertiary period of syphilis. If symptoms show themselves in the lungs during the first period of constitutional syphilis, they are the result either of the initial syphilitic fever or of actual tuberculosis. Chronic laryngeal ulcers are occasionally present in pulmonic syphilis. Sarcocoele is usually one-sided, and is characterised by an extraordinary thickening of the tunica albuginea, and growth of cellular tissue in the interior, which atrophies the tubuli seminiferi. Gummatous tumours sometimes form in this fibrous mass, but seldom make their way outwards.

FÖRSTER. — *Contributions to the Pathological Anatomy of Congenital Syphilis.* Würzb. Med. Ztschr., iv, 1863. Schmidt's Jahrb., vol. 118, p. 43.

Among 36 cases death occurred in all but one before the close of the first year, mostly during the first few weeks or months of life. Morbid changes were found in all parts, especially in the lungs and liver. In the lungs there were patches of lobular hepatization, which are distinguished from non-syphilitic by their unusual hardness; their smooth, bacon-like, grayish-red, generally dry cut-surface; by the usually cheesy degeneration of their centre, and the involvement of the interstitial connective tissue in the new formation; and by the abundant fusiform cells and oval nuclei. Gummatous tumours are rare; sometimes the air-cells are filled up with regularly arranged squamous epithelium. The atelectasis of syphilitic children has nothing characteristic; on the other hand, croupous coryza is quite peculiar to them. Pharyngeal ulcers are never met with, and only secondary laryngeal. In the liver fibrous inflammations of the capsule were most frequent; a gummatous tumour only occurred once. Diseased conditions in the lymphatic glands, the organs of circulation, the urinary and generative apparatus, and the bones, were rare. The skin was very often diseased, and there were limited abscesses in the subcutaneous tissue. Fissures and ulcers of the lips were observed, and intestinal catarrh was common. In one case Peyer's glands were the seat of a peculiar fibroid degeneration, their tissue thickened and indurated and ulcerated.

PELLIZANI, P. — *On Communication of Syphilis by means of Inoculation of Blood.* Gaz. Hebdom., ix, 22, 1862. Schmidt's Jahrb., vol. 117, p. 42.

Pellizani relates that three physicians, previously quite sound, were inoculated, Feb. 6th, 1862, with the blood drawn from the arm of a

female, æt. 25, who was six months pregnant and affected with secondary syphilis. The arm was carefully washed first, and was quite free from any syphilitic affection at the part. Some cotton was dipped in the blood and applied to the arm of the first and the forearm of the other two, the epidermis having first been scraped off, and three transverse incisions made. The blood applied to the two latter physicians had already coagulated. They remained free from any symptoms of infection, but the first, after all trace of inoculation had quite disappeared, found on the twentieth day a papule at the same spot, which remained dry for nine days, then became moist, and began to ulcerate. The axillary glands had previously enlarged. Two months after the inoculation nocturnal pains in the head were felt, and general roseola appeared, and the cervical glands enlarged. A little later the ulcer on the arm was healing, and mercurial treatment was begun.

ZEISSL.—*On Squamous Syphilitic Eruption.* Allg. Wien. Med. Ztg., vii, 1862. Schmidt's Jahrb., vol. 117, p. 43.

Zeissl argues that there is no true eruption of this kind; that those which appear so are either erythematous, or papulous, or tuberculous, or even pustular at the stage of cicatrization. The so-called psoriasis palmaris, or plantaris, which most resembles a true squamous affection, is really a maculo-papulous erythema, with exudation modified by situation. The firm adhesion of the cutis to the subjacent fascia, the thickness and the less extensibility of the epidermis, and the absence in these parts of sebaceous glands into which exudation usually chiefly takes place, are the circumstances which Zeissl believes to have this modifying effect. The presence of psoriasis palmaris Zeissl regards as a favorable omen, inasmuch as it seems to exclude the probability of iridial or periosteal suppurative exudations.

WAGNER, E.—*On Syphiloma.* Arch. d. Heilk., iv, 1863. Schmidt's Jahrb., vol. 117, p. 173.

Wagner announces that there is a specific syphilitic new formation, possessing a definite structure of cells and nuclei, just as there is a tuberculous, a sarcomatous, or carcinomatous. The cell growth lies in the interspaces of bundles of connective tissue.

FAYE and HEBRA.—*On Radesyge.* Wien. Med. Wehnschr., xii, 41, 42, 1861. Schmidt's Jahrb. vol. 117, p. 174.

Against Hermann's doctrine, that there is no constitutional or congenital syphilis, but that the morbid phenomena are solely the result of mercurial medication, Faye objects that radesyge, which is in all probability a derivative of syphilis, appears many years after birth in previously healthy children, and is curable by mercury. This is so much the case that the disease, which used to prevail endemically, is now becoming extirpated. Hebra has investigated the various affections said to be endemic, which are known as Radesyge, Skarljevo, morbus Dithmarsicus, Falcadina, Boala, Frenga, and Sibbens, and finds that all these terms have been applied to various syphilitic affections, or to lupus. They were supposed to be endemic because their origin was often obscure.

NERVOUS SYSTEM.

RADCLIFFE, C. B., M.D.—*A Course of Lectures on certain Disorders of the Brain and Nervous System, with special reference to the changes in opinion and practice which result from recent researches in Physiology and Pathology.* Lancet, Feb. 14th, 28th; March 21st; April 11th; May 16th, 23rd.

The first four lectures are devoted to the consideration of the physiology of muscular action and sensation; from these and the following we extract the principal propositions:—(I) As to the electrical phenomena which belong to muscle and motor nerve in the state of inaction.—(1) During the state of inaction the side and ends of the fibres of living muscular and nervous tissue are (with certain exceptions, to be mentioned presently) in a state of electric antagonism, the sides presenting signs of positive electricity, the ends of negative. (2) During the state of inaction the sides and ends of the fibres of living muscular nervous tissue present different degrees of electric tension at different points, the sides being most positive at the point midway between the two ends, the ends most negative at the point most distant from their edges. (3) Under certain circumstances the natural electrical antagonism of the sides and ends of the fibres of living muscular and nervous tissue, during the state of inaction, is reversed, the sides becoming negative, the ends positive. This takes place a short time before the occurrence of rigor mortis in the muscles of warm-blooded animals and of certain reptiles, and in the brain and spinal cord of frogs. In nerves also it is found to result from various injuries, mechanical, thermal, chemical, and others. (4) During the state of inaction living muscular and nervous tissue is found to present unmistakable signs of current electricity, if two points of dissimilar electricity or of dissimilar electric tension are included in the circuit of the galvanometer; but not so if the two points thus included are similar in electricity, or similar in electric tension. (5) During the state of inaction living animal tissues are found to be capable of acting upon the gold-leaf of an electroscope, and of furnishing other signs which show that the natural electricity of these tissues is characterised by high tension. (6) There is reason to believe that the primary electrical condition of living muscle and nerve during the state of inaction is that of statical electricity, and that the “muscular current” or “nerve current” which may pass from muscle or nerve during the state of inaction are only secondary phenomena. (7) The natural electricity which is present in living muscle or nerve during the state of inaction is altogether absent in rigor mortis. (8) It is possible that the elongated state of living muscle may be due to the presence of the natural electricity which belongs to living muscle in the state of inaction. (9) It is possible also that the contracted state of the muscle in rigor mortis may be due to the absence of the natural electricity which belongs to the muscle in the state of inaction. (II) As to the electrical phenomena which belong to muscle and motor nerve in the state of action.—(10) The natural electricity which is present in living muscle during the state of inaction is almost or altogether absent in the state of action. This is shown by an experiment of Du Bois Reymond’s, in which the needle of a galvanometer is much less deflected by the current pro-

ceeding from a contracting muscle than from one at rest. (11) The natural electricity which is present in living motor nerve during the state of inaction is almost or altogether absent in the state of action. This is shown by an experiment in which a portion of a frog's sciatic nerve is arranged within the circuit of a galvanometer, in consequence of which the needle is deflected, say to 60. When spasm is set up, by poisoning the animal with strychnia, the needle returns towards 0, say to 5, or nearer still. (12) The state of action in a muscle is accompanied by the development of instantaneous currents of high-tension electricity. (13) The state of action in a motor nerve is accompanied by the development of similar currents. Experiments proving these propositions are performed by causing a long piece of nerve attached to muscle to rest upon the muscle or nerve of a similarly prepared limb, when contractions ensue in the first muscle on causing the second to act through stimulation of its nerve. (14) It is probable that the instantaneous currents of electricity which are developed when a motor nerve passes from a state of inaction into that of action are analogous to the discharges of a torpedo. (15) It is possible that both ordinary muscular contraction and rigor mortis may both be dependent upon the disappearance of the natural electricity which is present in living muscle during the stage of inaction. (16) It is possible that the instantaneous electrical currents of high tension which are developed when muscle or motor nerve passes out of the state of inaction into that of action may produce contraction by disturbing and deranging that molecular constitution of the muscle without which the natural electricity of the muscle cannot exist. (17) There is reason to believe that the disappearance of natural electricity, when a living muscle passes from the state of inaction into that of action, and the contemporaneous development of instantaneous electrical currents of high tension, may stand to each other reciprocally in the relation of cause and effect, and that the correlation may furnish the means of harmonising the apparent contradictions in the discoveries of Matteucci and Du Bois Reymond with respect to the electrical phenomena of muscle during ordinary contraction. (III) On the part which artificial electricity has to play in the process of muscular motion.—(18) There is reason to believe that continuous electrical currents of low tension exercise a directly paralysing influence upon the part of a motor nerve which is included in the circuit. If the nerve of a rheoscopic limb be included in a galvanic circuit, it is impossible to produce contractions in the muscles by acting upon that part of the nerve which lies between the poles. Also if the spinal cord of a rabbit be included in the circuit of a voltaic battery, the part between the poles may be cut, pricked, torn, or even electrified, without giving rise either to pain or convulsion. So also the spasms produced by strychnia can be arrested in a frog by subjecting the spinal cord of the animal to the action of a continuous galvanic current. The same has been found true in a case of tetanus in the human subject. In all these instances the paralysing influence of the continuous current is quite irrespective of its direction. (19) There is reason to believe that instantaneous currents of high tension are the only forms of artificial electricity which have the power of producing muscular contraction. (20) There is reason to believe that a motor nerve or muscle cannot be thrown into a state of action by artificial electricity

unless it retain a certain share of its natural electricity. (21) The natural electricity which is present in living motor nerve or muscle during the stage of inaction is almost or altogether absent when the state of action is produced by means of artificial electricity. (22) When part of a motor nerve is included in a galvanic circuit, contraction may be produced by acting upon the part of the nerve which lies between the muscle and the nearest galvanic pole, if it be the negative, but not if it be the positive. (23) When a part of a motor nerve is included in a galvanic circuit, the natural electricity of the parts of the nerve which lie beyond the circuit is increased in intensity on the side of the positive and diminished in intensity on the side of the negative pole. (24) In the case where a muscle may be made to contract by acting upon the part of the nerve which lies between the part included in the galvanic circuit and the muscle, the negative pole is next the muscle, and the natural electricity of the part of the nerve acted on is diminished in intensity by the action of this pole; in the case where a muscle may not be made to contract by acting upon the part of the nerve which lies between the part included in the galvanic circuit and the muscle, the positive pole is next the muscle, and the natural electricity of the part of the nerve acted upon is increased in intensity by the action of this pole. (25) Before the time when the galvanic current has paralysed the part of a motor nerve which is included in the circuit, the muscle contracts with a moderate degree of force, both at the closing and opening of the circuit, and the order of the contraction is the same whether the positive or the negative pole be nearest to the muscle. (26) After the time when a galvanic current has paralysed the part of a motor nerve which is included in the circuit, the muscle contracts strongly—at the closing of the circuit, and not at the opening, if the negative pole be next the muscle; and at the opening of the circuit, and not at the closing, if the positive pole be in this position. (27) When under the action of galvanism on its nerve, a muscle contracts at the closing of the circuit, and not at the opening, the negative pole is next the muscle, and the natural electricity of the part of the nerve which intervenes between the circuit and the muscle is diminished in intensity by the action of this pole; and hence it follows that the presence of contraction at the closing of the circuit is coincident with the departure of electricity from the part of the nerve acted upon, and that the absence of contraction at the opening of the circuit is coincident with the absence of electricity in the same locality. (28) When under the action of galvanism upon its nerve, a muscle contracts at the opening of the circuit, and not at the closing, the positive pole is next the muscle, and the natural electricity of that part of the nerve which intervenes between the circuit and the muscle is increased in intensity by the action of this pole; and hence it follows that the absence of contraction at the closing of the circuit is coincident with the addition of electricity to the part of the nerve acted upon, and that the presence of contraction at the opening of the circuit is coincident with the subtraction of the electricity which had been added to the part of the nerve acted upon during the time the circuit remained closed. (29) When a motor nerve has been acted upon by galvanism until the part which lies between the circuit and the muscle has, under the action of the negative pole, lost its natural elec-

tricity and its susceptibility to impressions, the action of the positive pole will in a great measure bring back what was lost; and as this loss and recovery may happen more than once, this fact will explain how it is that contractions may disappear and reappear, as they are found to do in the case which is known under the name of "voltaic alternatives." (30) There is reason to believe that the differences in the order of contraction at the opening and closing of the galvanic circuit, of which mention has been made, and which have been ascribed to differences in the direction of the current along the nerve, that is, to the current being "direct" or centrifugal in the one case, and "inverse" or centripetal in the other, are in reality to be ascribed to differences in the position of the poles, that is, to the negative pole being next the muscle in the former case, and to the positive pole being in this position in the latter case. (IV) On the part which certain non-electrical agents have to play in the process of muscular motion—(a) as to the blood.—(31) The state of rigor mortis is coincident with stagnation and coagulation of the blood. (32) After the state of rigor mortis is fully established, the state of vital relaxation may be brought back by renewing the movements of the blood within the muscle. Brown-Séquard injected defibrinated dog's blood into the brachial artery of a guillotined criminal's arm after it had passed into a state of rigor mortis, and found that the rigidity passed off very speedily, and that the muscles were kept in a state of true vital relaxation as long as the injection was continued. (33) It is difficult to account for the phenomenon of rigor mortis by supposing that the blood plays the part of a stimulus to a vital property of tonicity in muscle. (34) It is less difficult to explain the history of rigor mortis by supposing that the blood may help to counteract this form of contraction, by ministering to the maintenance of the natural electricity of the muscle. (35) The state of relaxation in living muscle is disturbed by convulsive contraction when the supply of arterial blood is suddenly arrested by hæmorrhage, or (36) by suffocation. (37) There is reason to believe that one way in which strychnia and brucia bring about convulsive muscular contraction is by producing a change in the circulation which is equivalent to loss of arterial blood. Dr. Harley shows that blood containing these drugs takes less oxygen from, and gives less CO_2 to, the air, than healthy blood. (38) It is difficult to believe that blood produces the state of convulsive contraction by playing the part of a stimulus to a vital property of irritability in muscle or nerve. (39) It is not difficult to believe that blood may play its part in the process of muscular motion through the instrumentality of the natural electricity of the muscular and nervous systems, intensifying this natural electricity during the state of vital relaxation, failing to do so when muscular contraction is present. (b) As to the part which nervous influence has to play in the process of muscular motion.—(40) There is reason to believe that rigor mortis is coincident with a state of things in which nervous influence is altogether wanting. (41) There is reason to believe that the state of relaxation is not disturbed by convulsive contraction so long as the muscles receive a due supply of nervous influence, and that this state is disturbed in this manner at the moment when this supply is interrupted. Kussmaul and Tenner's experiments are appealed to for proof of this and of the following proposition. (42)

There is reason to believe that the state of muscular relaxation is not disturbed by contraction in cases where it may be supposed that the muscles receive an increased supply of nervous influence. (43) There is reason to believe that the state of muscular relaxation is more readily disturbed by contraction, and that the contraction itself is more powerful, when the muscles are receiving a diminished supply of nervous influence. An experiment by Dr. Brown-Séguard shows that the reflex contractions which may be produced in the hind leg of a frog by pinching the toes are capable of raising a heavier weight *after* the leg is liberated from the control of the brain and medulla oblongata by dividing the spinal cord low down in the cervical region. The weights raised before the division in two frogs were 60 grammes; in twenty-four hours after, 150. (44) It is difficult to believe that nervous influence produces the state of convulsive contraction by playing the part of a stimulus to a vital property of irritability in muscle or nerve. (45) There is reason to believe that the part which is played by nervous influence in the process of muscular motion is similar to that which is played by the natural electricity of the nervous system in the same process, and that the former agent may act through the instrumentality of the latter. (46) There is even reason to believe that the will avails itself of the aid of the natural electricity of the nervous system in playing the part it has to play in the process of muscular motion. Natural electricity, as shown by Du Bois Reymond, becomes latent in every act of voluntary muscular contraction. (47) When a muscle or motor nerve is thrown into a state of action by mechanical or chemical causes, or by heat or cold or light, there is reason to believe that this result is brought about through the instrumentality of the natural electricity of the muscle or nerve; for it is a fact that the state of action thus produced is marked by disappearance of natural electricity, and by the contemporaneous development of instantaneous electrical currents of high tension. (48) One conclusion which appears to arise out of the foregoing premises is, that *living muscle, when left to itself, is kept in a state of relaxation by the action of the natural electricity of the muscle.* (49) Another conclusion is, that *muscle passes out of the state of relaxation into that of contraction when the attractive force which is inherent in the physical constitution of the muscular molecules is no longer antagonised by the action of the natural electricity of the muscle.* (50) A third conclusion is, that *the natural electricity which antagonises contraction is extinguished for the moment by the instantaneous electrical currents of high tension (analogous to the discharges of the torpedo) which are developed when muscle or motor nerve passes from the state of inaction into that of action, and that ordinary muscular contraction is brought about in this way.* (51) A fourth conclusion is, that *the natural electricity which antagonises contraction is extinguished permanently at a certain time after death, and that the permanent contraction of rigor mortis is brought about in this way.* (52) This theory of muscular motion is not contradicted by any peculiarity in the law of muscular contraction which does not admit of a physical explanation. (53) This theory of muscular motion is not contradicted by the fact that dead muscle is less strong and tough than living muscle, for this phenomenon admits of a physical explanation. (54) The same may be said of

the facts that muscle cannot act without intervals of rest, and that muscle may alternately contract and relax without change of volume and without loss of time. (56) This theory of muscular motion is not contradicted by any fact which renders it necessary to suppose that an increased disposition to muscular contraction is connected with a state of exalted functional activity in a vital property of irritability in muscle or nerve. (57) On the other hand, it would seem that this theory of muscular motion derives no small amount of confirmation from the fact that it provides a *physical* explanation for the state of muscular relaxation no less than for the state of muscular contraction, and brings ordinary muscular contraction and rigor mortis under the dominion of one and the same law. (V) On rhythmical muscular motion.—(58) When the ventricles pass out of the state of systole into that of diastole, their muscular walls receive a fresh supply of blood through the coronary arteries. When the ventricles return from the state of diastole into that of systole, the blood which was injected into their walls at the previous systole has had time to lose its arterial properties; and thus the blood would seem to play the same part in the movements of the ventricles as that which it plays in ordinary muscular motion, for it has been seen that the state of relaxation (the natural state of living muscle when left to itself) is not disturbed by contraction when arterial blood is supplied to the arterial system, and that the state of relaxation is disturbed in this manner when arterial blood is not supplied, or (what is the same thing) when venous blood is supplied in place of arterial. (59) When the ventricles pass out of the state of systole into that of diastole, their muscular coats would seem to receive a due supply of nervous influence from the rhythmic nervous centres of the heart, for at this time these nervous centres must be roused into a state of full functional activity by the arterial blood which has just been propelled into these coats through the coronary vessels by the ventricular systole; when the ventricles return from the state of diastole into that of systole, their muscular walls would seem to be deprived of the nervous influence which they had been receiving from the rhythmic nervous centres during the diastole, for at the time of the new systole the blood which had been propelled into the coats of the heart at the previous systole has had time to lose those arterial properties which are necessary to keep these nervous centres in a state of functional activity; and thus nervous influence would seem to play the same part in the movements of the ventricles which it plays in ordinary muscular action, for it has been seen that the state of muscular relaxation is not disturbed by contraction so long as the muscles receive a due supply of nervous influence, and that this state of relaxation is disturbed in this manner at the moment when the supply of nervous influence is interrupted. (60) When the auricles pass from the state of systole into that of diastole, the main reasons would appear to be—(1) that the circulation through the heart is arrested for the moment, first of all by the ventricles having taken in as much blood as they can take in at their diastole, and afterwards by the auriculo-ventricular valves becoming closed at the ventricular systole; and (2) that in consequence of the circulation being arrested in this manner, the auricles relax and fill out under the pressure of the stream of blood which is continually setting in from the valveless openings of the great veins:

when the auricles return from the state of diastole to that of systole, one main reason would seem to be that their walls fall in, in consequence of the blood being, as it were, suddenly sucked away from their cavities by the diastole of the ventricles; and thus the explanation of the rhythm of the whole heart is included in the explanation of the rhythm of the ventricles, for the movements of the auricles resolve themselves into simple consequences of the movements of the ventricles. (61) The fact that the heart beats more quickly when the medulla oblongata or pneumogastric nerves are acted upon by *feeble* electric shocks may show, not an excited state of functional activity in the rhythmic nervous centres of the heart, but the very opposite, for it has been seen (v. 43) that the disposition to muscular contraction is inversely related to the amount of nervous influence supplied to the muscles. (62) The fact that the heart pauses in the state of diastole when the medulla oblongata or pneumogastrics are acted upon by *strong* electric shocks is readily explained by supposing that these shocks have paralysed the rhythmic nervous centres of the heart, and so left the muscular walls of this organ free to yield—(1) to the action of their natural electricity (which action antagonises contraction so long as it continues), (2) to the pressure of the stream of blood which is continually setting in from the valveless openings of the great veins. (63) The fact that the muscular coats of the ordinary vessels pass into a state of contraction when the vaso-motor nerves are exposed to the action of *feeble* electric shocks is in strict harmony with, and leads to the same conclusion as, the fact that the heart exhibits an increased disposition to contraction under analogous circumstances (v. 61). (64) The fact that the muscular coats of the ordinary vessels pass into a state of relaxation when the vaso-motor nerves are exposed to the action of *strong* electric shocks would also seem to be in strict harmony with, and to lead to the same conclusion as, the fact that the heart pauses in the state of diastole under the same circumstances. (65) The fact that the muscular coats of the ordinary vessels pass into a state of relaxation when their special nerves are divided is also in harmony with the fact last mentioned, for it can be of no essential moment whether these coats be paralysed by the action of electricity upon their nerves, or by dividing these nerves. (66) The fact that a heart, or the fragment of a heart, may go on beating in the air after it is out of the body need lead to no different conclusion respecting the action of the heart; for in this case the explanation may be either—(1) that air which is not changed by the respiration of the tissues may play the part of arterial blood in its action upon these tissues, and that air which is changed by this process may play the part of venous blood; or else (2) that the air may act as it would seem to act in the production of the respiratory movements of the chest, an action to which further reference will have to be made presently. (67) Nor do the facts which illustrate the action of the blood upon the muscular coats of the ordinary vessels reflect any doubt upon the conclusions which may be drawn respecting the action of the heart, for these facts would seem to show that these coats do *not* contract when they are acted upon by arterial blood, and that they do contract when they are directly or indirectly deprived of this action. (68) The fact that the peristaltic movements of the alimentary canal are increased when the admission of blood to its coats is prevented

by pressing upon the abdominal aorta, and diminished when the blood resumes its course in them on removal of the pressure, tallies well with the conclusions which have been drawn respecting the *modus operandi* of blood in muscular motion; and so also does the companion fact that these peristaltic movements are increased when the venous blood is prevented from escaping from the coats of the alimentary canal by pressing upon the vena porta, and diminished when the removal of this pressure allows the vessels of these parts at once to rid themselves of black blood, and to receive a new supply of red blood. (69) The fact that the peristaltic movements of the alimentary canal are quickened by passing *weak* electric shocks through the spinal cord or great sympathetic is in strict harmony with, and leads to the same conclusion as, the fact that the heart and the ordinary vessels exhibit an increased disposition to contraction under analogous circumstances (v. 61 and 63). (70) The fact that the peristaltic movements are arrested in the state which is opposed to contraction by passing *strong* electric shocks through the spinal cord or great sympathetic is in strict harmony with, and leads to the same conclusion as, the fact that the heart and the ordinary vessels pass into a state of relaxation under analogous circumstances (v. 62 and 64). (71) When the thoracic muscles pass out of the state of relaxation in which they are during expiration into the state of contraction in which they are during inspiration, what appears to happen is this—that the oxygen of the inspired air has made an “impression” upon the pneumogastric and other afferent nerves, and that this impression has brought about contraction through the instrumentality of the natural electricity of the nervous and muscular systems in the way already pointed out, (v. 47): when the inspiratory contractions come to an end, what appears to happen is this—that the disappearance of the oxygen of the air in the process of respiration has removed the cause of the impression which led to the contractions, and so left the muscles free to return to their natural state of relaxation. In these three forms of rhythmical muscular motion, therefore, there is nothing to contradict, and much to confirm, the previous conclusions respecting ordinary muscular motion. In a word, there is every reason to believe that the theory which is applicable to ordinary muscular motion, is also applicable to rhythmical muscular action, and that without any fresh assumption it will even give an insight into the mystery of the rhythm itself. (72) In the case of a sentient as of a motor nerve, the nerve loses electricity when it passes from the state of inaction into that of action. When a rheoscopic limb covered with its skin has its nerve connected with the circuit of a galvanometer, the deflexion of the needle which is produced by the nerve current is much diminished by bringing the limb into contact with hot water. (73) In an electrical point of view, the action of a sentient nerve which produces sensation is in every respect the same as the action of a motor nerve which produces muscular contraction. Experiment shows that pain and convulsion are produced by the same electrical conditions—they come together and go together. (74) There is reason to believe that the same conclusions are necessary with respect to the action of a sentient nerve in sensation as those which are necessary with respect to the action of a motor nerve in the production of muscular contraction. The action of a sentient nerve may have to be explained, *not* by assuming that a

vital property of sensibility has been stimulated into a state of functional activity, but by supposing—(1) that the “impression” which issues in sensation involves an equivalent expenditure of natural electricity in the sentient nerve; (2) that this expenditure gives rise to the development in and near the nerve of instantaneous electrical currents of high tension, analogous to the discharges of the torpedo; and (3) that the instantaneous currents or discharges which are developed in the neighbourhood of that part of the nerve which lies within the sensorium will give rise to sensation if any sensorial ganglionic cells happen to come within their range of action. Radcliffe then proceeds to state, in the way of propositions, certain facts and views relating to convulsion, tremor, spasm, paralysis of certain kinds, pain, and sensations analogous to pain. He seeks to ascertain whether these disorders are to be treated as the result of exalted vital action or the reverse. (75) The epileptic and epileptiform paroxysm is not unfrequently preceded by signs of defective respiration. (76) It is also usually accompanied by a state of unmistakable suffocation. (77) The convulsion of hysteria or chorea is associated with a state of very defective respiration. (78) The condition of the respiration during convulsion is one which supports the notion that the convulsion is connected with depressed and not with exalted vital action. (79) In the chronic forms of convulsive disorder the interparoxysmal condition is usually marked by evident signs of a feeble circulation. (80) The epileptic and epileptiform attack is usually, if not invariably, preceded by signs of failure in the circulation, as cadaveric pallor of the countenance, feeble pulse at the wrist. (81) In the fully developed paroxysm the pulse is sometimes roused to a considerable degree of activity, not because the arteries are then receiving a largely increased supply of *red* blood, but because they are then labouring under a load of *black* blood, as they are found to labour under during suffocation. In proof of this he appeals to Reid’s and Draper’s experiments, showing that during suffocation the pressure is increased in the arteries, and that the blood circulating in them is black. (82) Convulsion is never coincident with a state of active febrile excitement of the circulation. (83) The convulsion which may attend upon the close of Bright’s disease is connected with a pale and watery condition of the blood, and with unmistakable signs of great vascular debility, as well as with suspicions of uræmic poisoning. (84) Epileptiform convulsion is a direct consequence of sudden and copious loss of blood. (85, 86) The signs of a weak or jaded brain are scarcely ever absent in persons who are liable to epileptic and other chronic forms of convulsive disorder. (87) All signs of mental life are abolished, or on the point of being abolished, during the paroxysm of convulsion. (88) Convulsion must not be looked on as a symptom of active inflammation of the brain or its membranes. It seems, indeed, to be a constant rule that the hot stage of active inflammation of the brain or of its membranes is attended, not by convulsion, but by acute delirium. In the more passive forms of this inflammation convulsion is a much more frequent phenomenon than in the acute forms, and it is not so easy to determine the relations of the convulsion to the inflammation; but, so far as Radcliffe can make out, convulsion is altogether incompatible with the presence of the periods of vascular reaction, even though these periods be but faintly

marked. (89) Convulsion must not be looked upon as a symptom of a congested condition of the cerebral veins. Proof of this is afforded by Kusmaul and Tenner's experiments. (90) The peculiar condition of the nervous system which is known under the name of irritation, and which in the majority of cases has a great deal to do with the production of convulsion, is in no sense the equivalent of inflammation. The morbid condition of the nervous system which is known under the name of irritation may be attended by various definite symptoms, and followed by various definite results. According as it may happen to affect the parts of the nervous system which minister to ordinary muscular movements, to common or special sensation, or to vascular movements, it may be attended by tremor, convulsion, or spasm, by morbid sensation of various kinds, or by a contracted condition of the vessels. According as it may happen to have affected one or other of the parts of the nervous system which have been named, it may be followed by paralysis of the ordinary muscular movements, by anæsthesia or some analogous condition of special sensation, or by congestion and inflammation. Moreover, it may be attended by partial or general delirium, and followed by partial or general stupor or coma, if its seat happen to be in the parts of the nervous system which minister to volition and reason. Nor is it difficult to see how it should be thus attended and thus followed. The circumstances which give rise to the state of irritation in some part of the nervous system, and which favour the development of this state, are circumstances which appear to produce the reversal of the natural electrical relations of the exterior and interior of the nerve-fibres at the seat of irritation. It has been seen (3) that the natural electrical relations of the exterior and interior of the nerve may be reversed under circumstances which may give rise to the state of irritation in a nerve or nerve centre, and which favour the development of this state; for nothing is more certain than that mechanical injuries to a nerve or nerve centre may give rise to a state of irritation in these parts, and that a depressed condition of the vital powers generally is favorable to the development of this morbid state. And thus there is no difficulty in supposing that the natural electrical relations of the exterior and interior of the nerve-fibres may be reversed at the seat of irritation. Now, in the case where the natural electrical relations of the exterior and interior of the nerve-fibres are preserved, all parts of the exterior of the fibres are electrified positively and all parts of the interior negatively, and the electric condition of the exterior and interior appears to be one of static tension so long as the nerve-fibre remains in a state of inaction (v. 6), and this appears to be the case because *all* parts of the exterior are electrified positively and *all* parts of the interior are electrified negatively, for it is a law of electricity that parts electrified with *similar* electricity repel each other. Nor is this condition of static tension *in* the exterior and *in* the interior of the nerve-fibres neutralized by a contrary action *between* the exterior and the interior; for there is something in the constitution of the fibres, be that what it may, which keeps the exterior and interior in opposite electric conditions, and prevents their opposite electricities from combining and neutralizing each other. But in the case where the natural electrical relations of the exterior and interior are reversed in a certain part of a nerve-fibre, instead of all parts of the exterior being electrified

positively and all parts of the interior negatively, some part of the exterior is electrified negatively and some part of the interior positively; and the result is that there must be a continual combination and disappearance of electricity *in* the exterior and *in* the interior between the parts of the fibre in which the natural electrical relations of the interior and exterior are preserved and the part in which these relations are reversed. The result, that is to say, is one in which the nerve must lose electricity as long as this reversal continues, for it is a law of electricity that opposite electricities combine and neutralize each other, if there be nothing to prevent them yielding to their natural affinities. In other words, the result of the reversal must be to throw the nerve from the state of inaction into that of action, for it has been seen (v. II) that a nerve loses electricity when this takes place. On this view Radcliffe thinks there is no difficulty in understanding how, according as its seat may be in ordinary motor nerves or ganglia, in sensory nerves or ganglia, in the cerebral hemispheres, or in vaso-motor nerves or ganglia, the "irritation" may be attended by morbid contractions of the common muscles, by morbid sensations of various kinds, by morbid mental movements, or by morbid contractions of the blood-vessels; and how, according as its seat may have been in one or other of those parts of the nervous system which have just been mentioned, the irritation may end by paralysing one or other of those parts, and by producing in this manner paralysis of the ordinary muscles, or anæsthesia and conditions allied to it, or partial and general stupor and coma, or congestion and inflammation. The latter Radcliffe seems to derive from a state of exhaustion and paresis of the vaso-motor nerves and ganglia, induced by the previous irritation. (93) The general conclusion to be deduced from the consideration of the condition of the respiration and circulation and innervation during convulsion is this—that the pathology of convulsion is as much in harmony with the view of muscular motion set forth in these lectures as it is out of harmony with the current view of the subject—that, in fact, convulsion is the sign of depressed and not of exalted vital action. (94) The diet in many cases of chronic convulsive disorder ought to contain somewhat more than an average quantity of oily and fatty matters, and somewhat less than an average quantity of lean meat. Radcliffe fears that a largely meat diet is likely to generate a semi-gouty condition. (95) There is reason to believe that gymnastic exercises are very beneficial in the great majority of chronic convulsive cases. In more than one case the patient has stated that an impending attack has been warded off by exercise of this kind, which acts beneficially on the respiration as well as on the other functions. (96) The action of cod-liver oil is beneficial in the great majority of cases of chronic convulsive disorder, and so also is that of phosphorus, both being important constituents of nervous tissue. The ethereal tincture of phosphorus is the form he prefers, of which he gives about mij mixed with sulphuric ether, now and then, especially when there seems to be need for a stimulant. (98) Radcliffe doubts the suitableness of belladonna as a remedy in many cases of epilepsy and other forms of chronic convulsive disorder, chiefly, as it seems, because he regards it as producing an anæmic condition of the brain. Opium, on the contrary (99), he looks on as a suitable remedy in some cases, because it produces an opposite effect.

(100) He doubts the efficacy of zinc in epilepsy and in epileptoid cases. (101) Radcliffe believes that alcoholic stimulants are the most trustworthy antispasmodics in the prevention and treatment of convulsion. Experience convinces him that this is the case in epilepsy, hysteria, and chorea. (102) There is reason to believe that bloodletting, in one form or another, may be permitted in certain cases of convulsion, or where apoplectic extravasation is imminent from the gorged state of the cerebral veins. (103) Therapeutically as well as pathologically, there is every reason to believe that the means to be employed in the treatment of convulsion are those which exalt, not those which depress, vital action. (104) The condition of the respiration in tremor is one which warrants the belief that this disorder is connected with depressed and not with exalted vital power. (105, 106) The same is true of the circulation and the innervation. (108) The means to be employed in the treatment of tremor are those which exalt vital energy in general, and nervous tone in particular. (112) Respecting spasm also the conclusion is the same as that which has been drawn respecting convulsion and tremor, namely, this—that the morbid muscular contraction is connected with a deficient manifestation of vital power in general, and of nerve power in particular, the great functions of circulation, respiration, and innervation, being depressed rather than exalted. It would seem that the pathology of spasm, no less than that of convulsion and tremor, is as much in harmony with the views of the physiology of muscular motion which are set forth in these lectures as it is at variance with current views on this subject. It would seem, in fact, that the only key to the pathology is that which is supplied by the physiological premises, and that these physiological premises are confirmed and established by the pathology. In the pathology and in the physiology of muscular motion it appears to be one and the same story throughout. As to the treatment of spasm, Radcliffe expresses his opinion that the means to be employed are those which exalt vital energy in general and nervous energy in particular. (114) Instead of being connected with a state of febrile or inflammatory excitement, there is reason to believe that pain is connected with a depressed state of the circulation. Radcliffe endeavours to substantiate this by reference to the processes of gout, rheumatic fever, smallpox, and dislocation, in which he makes out that the pains disappear in proportion as the inflammatory phenomena become developed. (115) The condition of the respiration during pain sheds no certain light upon the pathology of pain. (116) Instead of being connected with an excited condition of the function of innervation, there is reason to believe that pain is connected with a depressed condition of this function. Radcliffe illustrates this from the phenomena of neuralgia, as observed in his own person, and from a case of meningitis, in which agonising pain was succeeded by fierce delirium. He concludes that the pathology of pain agrees in all essential particulars with the pathology of tremor, convulsion, and spasm, and the process on which it depends implies vital exhaustion, and not vital stimulation. He advocates the treatment of all these disorders by supplying the weak nervous system with appropriate nutrients, such as oily articles of food and medicine, with phosphorus in various forms; by upholding and rousing the vital powers in general, and the nerve power in particular; by a stimulant plan of treatment, in which alcoholic drinks

and ethers and phosphorus in suitable doses figure most conspicuously. He discountenances the use of sedatives, as opium or belladonna.

CAMERER.—*On Chronic Spinal Meningitis and Myelitis.* Wurtemb. Corr. Bl., xxxii, 5, 1862. Schmidt's Jahrb., vol. 119, p. 167.

Both diseases often occur together, but one or other predominates. In chronic meningitis there are pains, at first extending round the body, ordinarily taken for rheumatic, with a feeling of tension and stiffness in the neck and pains in the back. The stiffness and pains are usually not very troublesome, and therefore are often not mentioned by the patient; the pains are sometimes only felt on pressure, not during movements, and do not occur spontaneously. It is only when there is caries of the vertebrae that they attain to great severity. Next ensue morbid sensations in the lower limbs, which soon also become weary and weak, and their temperature falls. Paralysis soon follows, first appearing as constipation. The bladder becomes involved sooner or later, sometimes first in its sphincter, sometimes in its detrusor. The principal symptom of meningitis is, however, the palsy of the limbs, which constantly extends from below upwards, and even in the case where the inflammation has its seat in the upper part of the cord always affects the legs more severely than the arms. As the paralysis increases, more or less marked twitchings occur in the palsied muscles. The skin loses more and more its sensibility, but becomes at intervals the seat of very painful hyperæsthesias. Bed-sores form early, occasioned partly by the anæsthesia, partly by the unaltered position and the weakening of the skin, produced by the involuntary discharge of the excretions. The course of the disease is steadily progressive, and almost inevitably fatal. The acute form of the disease is distinguished from the chronic by its sudden setting in with pyrexia, by the severe dorsal pains, and the rapid progress of the symptoms. Chronic myelitis is characterised by the irregularity of its course, the alternations of improvement and deterioration; by its ordinary seat in the upper parts of the cord, and its extending downwards; by the greater amount of paralysis of the upper compared with that of the lower extremities; by the contractions of the paralysed limbs, which in meningitis usually lie flaccid and extended; by the incomplete palsy of the muscles of respiration, and the difficulty of breathing and palpitation of the heart occasioned thereby.

LEYDEN.—*On Gray Degeneration of the Spinal Cord.* Deutsche Klinik, 13, 1863. Schmidt's Jahrb., vol. 119, p. 167.

Leyden describes three varieties of this affection. The first appears in circumscribed patches. The second attacks the whole extent of separate columns of the cord. The third is secondary. Cruveilhier described the first originally, and it was afterwards briefly noticed by Rokitansky. It is characterised by grayish-red patches of translucent substance, with numerous vascular ramifications. These consist of a fibrous connective tissue, with many small round cells, which are partly grouped together and partly disposed around the vessels. The latter are surrounded by an extraordinarily thick outer coat, containing numerous young nuclei and much fat. The nervous tissue is almost quite destroyed, only a few fibres empty of contents, and a few ganglion-cells remain. The diseased

parts are abruptly separated from the surrounding, and are alike in the cord and in the brain. The original tissue is exactly replaced by the new formed connective tissue, which causes atrophy of the nerve elements. No diminution or increase of the original size takes place. The clinical phenomena corresponding to the morbid changes have nothing characteristic. The second form mostly affects the posterior columns, and is found pretty constantly in the disorder termed Ataxie progressive, as proved by numerous autopsies. Besides the connective tissue, which is present in large amount, there is usually a shrinking and wasting of the posterior columns, but no growth of interstitial nuclei. Hence it is doubtful whether the change consists in a new formation of fibroid tissue, or merely in an atrophic wasting of the contents of the nerve-fibres. Together with the fibroid tissue, numerous corpora amylacea are met with, and there is often a thickening and fatty degeneration of the walls of the vessels. The third form has been specially described by Türk; it occurred together with foci of disease in the brain, from whence degenerated tracts could be traced in a descending direction through the spinal cord. In the altered parts there was found a fine-fibred, reticular tissue, with scanty, roundish nuclei imbedded in it, not presenting the appearance of active growth. The nerve-fibres were atrophied, there were no corpora amylacea, the outer coat of the vessels was scarcely thickened or altered. This form is rare.

WESTPHAL, O.—*On Tabes Dorsalis and Progressive General Paralysis.*
 Allg. Ztschr. f. Psychiat., xx, p. 1, 1863.

From careful examination of recent cases, Westphal finds that in a certain number dragging pains, in the legs chiefly, had preceded or accompanied the commencement of paralysis and mental weakness; and that in these, at the same time, the power of standing and walking, as far as it still existed, became materially less when the eyes were closed, or was even totally lost, the patients, when they made the attempt, falling down on the spot. From his cases the author comes to the following conclusions:— (1) There is an affection of the spinal cord (gray degeneration of the posterior columns), which anatomically is quite the same as that which exists in tabes dorsalis, and which, in its subsequent course, leads to disorder of vision. (2) In general, this resembles the progressive general paralysis of the insane, both in the kind of delirium and of the paralytic symptoms, as also in the emaciation. (3) It is, however, distinguished from the latter by the circumstance that the patients, when they close their eyes, are unable to stand or walk without tumbling down, and that the disorder of articulation belonging to general paralysis is quite wanting. (4) The palsy of the bladder and of the extremities precedes for a long time the mental derangement (contrary to what occurs in the progressive paralysis of the insane). (5) No disease of the cerebral substance analogous to the gray degeneration of the columns of the spinal cord was discoverable. The latter extends pretty uniformly over the whole extent of the posterior columns as far as the floor of the fourth ventricle, where it only occurred in patches. The nature of the cerebral disease is unknown, but appears to be accompanied by hydrocephalus internus.

SAPPEY.—Gaz. des Hôpit., 8, 1863.

Relates the result of an inspection of the body of a man, æt. from forty to forty-five, who died with the symptoms of ataxie locomotrice progressive. There was no morbid change in the brain or cord, except in the lumbar portion of the latter. The posterior columns here were of a grayish colour, the posterior roots were of a grayish red, much thinned, and resembling bundles of vessels, except at their entrance into the cord, where they were flattened. The anterior roots and columns were normal. In the grayish parts the nerve-fibres were found partly quite devoid of their contents, partly containing them only here and there, partly quite filled with them.

FRIEDRICH, N.—*On Degenerative Atrophy of the Posterior Spinal Columns*. Virchow's Archiv, xxvi, p. 391, p. 433; xxvii, p. 1. Schmidt's Jahrb., vol. 120, p. 184.

The paper contains an account of six cases having the symptoms of ataxie locomotrice progressive or tabes dorsalis. Three proved fatal from typhoid fever. In these the pia mater all along the posterior column was opaque and thickened, adherent to the cord and to the dura mater by narrow bands. The ligament. denticulat. was similarly affected as well as the pia of the lateral regions of the cord. The posterior columns were atrophied as high up as the lower half of the fossa rhomboidalis; they had a translucent grayish appearance, and were in two cases firmer than natural. The change was most advanced in the lumbar region, where it had extended to the lateral tracts. The posterior median fissure was obliterated. The posterior roots were thin, wasted, and stiffish; the anterior normal. In the posterior the continuity of fibres was not interrupted, there was no fatty degeneration; the axis-cylinders were preserved, but the medulla was coagulated, and there was much wavy connective tissue between the fibres. The hypoglossal nerves were in the same state, but there were also numerous corpora amylacea in the connective tissue. Friedrich refers these changes to a chronic septo-meningitis. The influence of hereditary tendency is remarkable. The six cases belonged to two families; their fathers were drunkards, and had certainly begotten their children while intoxicated. Two were male, four female. The duration of the disease varied from nine to twenty years. All treatment was unavailing. Friedrich infers from his cases that the posterior columns do not conduct sensory impressions, but are concerned in the co-ordination of movements; and further, as the lower limbs were not materially wasted, that the centres regulating their nutrition cannot be intimately connected with the posterior columns, as well as that the mere non-exercise of the muscles (which extended in these cases over years) cannot be essential to atrophy.

MAROTTE and TROUSSEAU.—*On Ataxie Locomotrice Progressive*. L'Union, 67, 88, 89, 1862. Schmidt's Jahrb., vol. 117, p. 33.

In Trousseau's case the disease had lasted thirteen years. The lower extremities alone were affected, the patient could not stand, sensation in both limbs was very dull. The cord in the lumbar region was slightly atrophied, the posterior columns grayish, normally firm. The posterior

roots were very atrophied, the anterior normal; the former were of a reddish-gray colour, ribbon-like, most of their fibres empty. The patient was fifty-five years old. Marotte's patient was forty-seven years old, and had suffered from the disease fifteen years. He died in an extreme state of marasmus. To the end of his life he had electric darting pains and frequent shocks or starts in the limbs, but no loss of sensation in any part. At the autopsy the dura mater of the cord was found much injected posteriorly, and the posterior surface of the arachnoid showed much plastic exudation, with dilated vessels. The cord itself was atrophied, decreasing in size from above downwards; the posterior surface of a translucent yellow, especially at the lower parts. The posterior roots, especially the lower, were markedly gray, thin, soft, and very hyperæmic, the corresponding anterior ones similarly but much less altered. The individual nerve-fibres of the posterior roots of the lumbar region were almost all degenerated, and those of the upper parts much less so; the anterior upper ones not at all, the anterior lower ones but little. The posterior columns, as far as the posterior horns, were yellow and gelatinous, and not easily distinguishable from the latter. The gray substance up to the fourth ventricle and the corpora quadrig. was extremely hyperæmic, and reddish; the antero-lateral columns very vascular, but otherwise normal; the small cells of the gray matter in the lumbar region were destroyed, those of the anterior horns and in the centre of the medulla distinguishable, but surrounded by pigment. Numerous amyloid corpuscles were present in the medullary substance, which in most parts was diseased. The connective tissue was not hypertrophied.

VIDAL (*Gaz. des Hôpit.*, 127, 1862).—DUGUET (*L'Union*, 122, 1862).—HERSCHELL (*Bull. de Thérap.*, lxiii, Oct., 1862).

Record cases of *Ataxie locomotrice* progressive successfully treated by nitrate of silver. Vidal's patient was æt. 45, addicted to sexual excess. The lower extremities alone were affected. He had constant hyperæsthesia of the skin, with diminished tactile sensibility; loss of muscular sensibility, without impairment of muscular power; paralysis of the sphincter ani and of the virile power. The movements of his legs were unsteady and not co-ordinated; he could not walk if his eyes were closed. After taking *Argenti Nitr.* in daily doses of one to two thirds of a grain for about two months, he recovered to a great extent. Duguët's patient was a female, æt. 39, who had been much weakened by frequent losses of blood, and became very anæmic. Epileptic attacks ensued, and recurred several times. It was now found that she had the symptoms of *Ataxie loc. progr.*, but limited to the right arm and leg. The movements of both these limbs were quite un-coordinated; the patient was quite unable to walk. The tactile sensibility of the whole right half of the body was very dull, but that of temperature was normal; electric sensibility and contractility were not impaired. Amblyopia existed, and the mental faculties were weakened. After three months' treatment with nitrate of silver the patient had in great measure recovered the use of the right arm and leg, her memory and speech had much improved, only the vision was in nearly the same state. Herschell's patient was a rope-maker, æt. 47, who was almost completely amaurotic, had nearly lost

the power of motion and sensation in his lower limbs, and to some extent also in the upper. He was completely restored after about two months' treatment.

REMAK.—*On Tabes Dorsalis*. Deutsche Klinik, 49, 1862. Schmidt's Jahrb., vol. 118, p. 173.

Remak distinguishes different forms of the disease, according to its seat. *Tabes cervicalis* is characterised by eccentric pains, small immovable pupils, and the long duration of the motor disorders. The primary change is a derangement of the nutrition of the nerve-cells; myelitis occurs secondarily. *Tabes lumbalis* is sometimes an independent affection, sometimes united with a unilateral lumbo-sacral neuritis. Rheumatic and arthritic influences give rise to deranged circulation in the cord, which is the fundamental evil. In *tabes dorsalis* the power of walking and the functions of the urinary and genital organs and of the rectum are more evidently impaired, and the excentric pains are very severe. *Tabes basalis* usually commences with deranged action of the muscles of the eye, and may be therefore confounded with cerebral tumour. Disorders of vision and anæsthesia and paresis of the hands ensue at a later date. *Tabes cerebelli* is very rare, and is characterised by extreme unsteadiness of gait as almost its only symptom, and sometimes by amblyopia. Pain on pressure over the spinous processes occurs only in *tabes lumbo-dorsalis*, and is a favorable prognostic sign, as indicating a still existing myelitis. All forms of *tabes* may originate in syphilis. The constant galvanic current is the most effectual remedy, and is most available when myelitis is actually present. When there has been primary degeneration of the nerve-cells, when the disorder is complicated with the results of spinal meningitis and growths of connective tissue, galvanism is contra-indicated. It is more successful in *tabes dorsalis* and *lumbalis* than in the other forms. The induced current is injurious. Remak has not found nitrate of silver to be of much efficacy.

ISNARD.—*On Ataxie Locomotrice Progressive*. L'Union, 131, 134, 135, 137, 141, 142, 1862.

Isnard regards the disorder as a neurosis—(1) because it alternates in the same family with other nerve disorders; (2) because all its symptoms are functional derangements of the nervous system; and (3) because all the remedies which have hitherto been found most useful are those which are advantageous in other neuroses. The result of autopsies are not a valid counter-argument, for on the one hand there are cases in which no morbid change has been found, and on the other the presence of anatomical alteration does not exclude the idea of a neurosis. The want of co-ordination in the movements is not the result of a local disease in the cord affecting the seat of co-ordination (probably the posterior columns and the gray substance), but of disturbances of the harmonic action of individual parts of the cord together. This consists, according to Isnard, in a *dissimilar* derangement of the muscular sensibility. So long as the muscular sensibility is only uniformly too weak or wholly absent, co-ordination of the movements is not lost, though in the last case the aid of vision may be necessary. If, however, the sensibility is too delicate in

some parts and too dull in others, then there is disharmony in the movements, which the sense of vision can only partially correct.

BENEDIKT, M.—*On Quasi-paralytic Disorders of Mobility, without proper Paralysis.* Wien. Med. Wchenschr., xii, 44—48, 1862. Schmidt's Jahrb., vol. 118, p. 173.

Benedikt enumerates as the causes of these disorders—(1) alterations of the sensibility; (2) disorders of the equilibrium of antagonist groups of muscles; (3) loss of the power of localizing movements; (4) want of proportion between the normal volitional stimulus and the excitability and conducting power of different parts of the nervous system; and (5) general disturbance of the functions of the brain, without complete loss of any of them. With regard to the affection *Ataxie locomotrice*, he views it as made up of two factors, viz., loss of muscular consciousness (in acting) and loss of appropriate co-ordination of the movements. Ataxia may, however, exist without the loss of muscular consciousness or of cutaneous sensibility. Defective co-ordination, he remarks, is not a rare symptom. It is met with in many partial paralyses, and is produced by the volitional stimulus acting unduly on the antagonist muscles, when those which should execute a movement are incapable of contracting properly. The antagonist muscles are always set in play to a certain extent, for the purpose of regulating the action of the others. To produce ataxia, it is by no means necessary that one whole group of muscles should be paralysed completely. Any affection which impairs the functional excitability of the central nervous apparatus may produce ataxia, and so may any disorder of the conducting nerves, or of their terminal extremities at the periphery, provided they are non-uniformly affected. Static spasms (v. Romberg, vol. ii, p. 156) afford most striking instances of cerebral ataxia, while peripheric is very common in paretic conditions of individual muscles of the eye. Spinal ataxia is characteristic of *tabes dorsalis*.

EMPIS.—*Gaz. des Hôpit.*, 73, 77, 1862. Schmidt's Jahrb., vol. 117, p. 32.

Relates a case of progressive paralysis of the lips, tongue, and palate, in which the orbicularis oris and all the muscles supplied by the facial nerve maintained their electric contractility completely.

REYNOLDS, J. RUSSELL, records ('Lancet,' July 11th), a case of incipient wasting palsy, cured by strychnia, gr. $\frac{1}{10}$ ter die. The man, æt. thirty, had fallen, while skating, on the back of his head, and some weeks after he suffered with impaired vision of the left eye, dilatation of the left pupil, and constant pain in the head. These symptoms ceased, but recurred again for a time, and have always yielded rapidly to treatment. About nine or ten months from the date of the accident the muscles of the left upper arm and shoulder began to waste. The interrupted current was of marked benefit in improving the bulk and nutrition of the muscles; the continuous was of no avail. Reynolds deduces from the detailed history of the case the following conclusions:—Since the loss of power did not depend solely upon the impaired nutrition of the muscles, and the muscular tissue was not primarily affected, it may be inferred—(1) That neither the muscular tissue nor the ganglionic

system of nerves was the starting-point of morbid change. As muscular and cutaneous sensibility and electric contractility were persistent, and they, with the nutrition, speedily became under treatment either normal or exaggerated, while voluntary power remained in abeyance, it may be presumed, (2) That the function of the nerve-trunks was not destroyed, and that the seat of wasting palsy was not in them. Since the palsy was preceded, and has been followed, by signs of disturbance in the cerebral functions, it is to be inferred—(3) that the affection had its remote origin in the injury inflicted on the head. But as there was marked diminution of electric contractility and sensibility and of nutrition, and, moreover, as the paralysis was in the upper portion of the affected limb, it may be presumed—(4) that loss of cerebral function was not the sole cause of the symptoms. Since the nutrition, contractility, and sensibility were diminished, but not lost, while voluntary power was entirely abolished, it may be concluded—(5) that the central functions of the medulla spinalis were *pro tanto* diminished, and its conducting property was in abeyance, and that in the impaired nutrition of that organ we must seek for the essential fact in wasting palsy.

BOUCHUT.—J. de Méd. et de Chir. pratiq., Aug., 1863.

Recommends the application, several times repeated, of Tinct. Iodinii to parts affected with neuralgia. In some cases, when this fails, the addition of morphia (in the proportion of ʒss of Morphiæ Sulph. to ʒss of the tincture) gives very good results.

GRUBER.—On *Inflammation of the Brain from Otitis, without Caries*.

Wochenbl. d. Aerzte in Wien., Nos. 22 and 25. Med. Times and Gaz., Aug. 1st.

Gruber met with a case in which inflammation from external injury arose within the right ear (which had previously been quite healthy), and extended to the right transverse sinus, and thence by means of the inferior cerebellar veins to the cerebellum. An acute pleurisy, with purulent exudation, terminated the patient's life. The most careful examination of the temporal bone and the ossicula failed to detect the slightest trace of caries. This case shows the importance of early derivative measures, as repeated leeching, the cautery, &c., as also the securing a sufficiently large opening in the membrana tympani for the discharge of the pus. In by far the great majority of cases the sinus transversus is the means of propagation, and only seldom one of the sinus petrosi. This can only arise from the anatomical relations of the sinuses to the cells of the mastoid process; and to elucidate this, Gruber has examined numerous healthy ears, and has found, as a general rule, that the entrance to the cells is not in the posterior wall of the cavity of the tympanum, but in the posterior section of its internal wall. There is usually found an aperture from one to three lines long, which is prolonged into a canal, that extends to the series of cells in contact with the transverse sinus. Sometimes there is also a communication with these cells through the posterior wall of the tympanum. In the new-born infant the few large cells of the process are but a continuation of the tympanum, and are separated from the sinus by a pretty thick wall of spongy bone. This wall, in proportion as the number

of cells of the process increases, becomes thinner, and is thinnest at the period which elapses between the cessation of the cellular formation and the recommencement of their ossification. It is sometimes partially wanting, the wall of the sinus being in contact with the lining of the cells of the mastoid process. In older persons the wall again becomes thickened, sometimes to the extent of a line or more. This explains why it is that internal otitis is most liable to induce fatal inflammation of the brain between the ages of eighteen and thirty, the age of forty-six being the oldest at which it has been known to do so. So, too, notwithstanding the frequency of otorrhœa in children, such fatal issue is proportionally very rare, inasmuch as the wall of separation, though spongy, is also thick in proportion. Arlt remarked that the veins must not be regarded as the sole source of propagation of the inflammation, as this may take place also by means of the thin bony wall, as might be expected from the analogous conditions under which orbital abscess is formed.

LANCEREAUX.—*On Meningeal Hæmorrhage in relation to Pachymeningitis.* Arch. Génér., Nov., Dec., 1862; Jan., 1863. Schmidt's Jahrb., vol. 118, p. 168.

Lancereaux is persuaded that the pseudo-membrane is first formed, and that the hæmorrhage is secondary (v. 'Year-book,' 1861, pp. 161, 168; and 1863, p. 77). The seat of the pseudo-membranes is almost always the convexity of the brain, on one or both sides, usually in the vicinity of the division of the middle meningeal artery; here also the layer is thickish, and here also the sanguineous effusions are usually formed. The pia mater, as well as the dura, commonly presents marks of hyperæmia or of inflammation, and even of suppuration. The symptoms vary according to the age and the development of the pseudo-membranes, the gradual or sudden effusion of bloody or serous fluid. If the membrane exists alone, its presence is only indicated by pain, usually limited to the seat it occupies, and, perhaps, by giddiness. When hæmorrhage has taken place there are then signs of pressure on the brain, as dulness, somnolence, and paralysis, and of excitement, as manifested by contraction of the pupil and of the extremities, and sometimes convulsions. The transitory and interchanging character of the symptoms is also characteristic. The skin is usually pale, cachectic, the pulse normal, there is emaciation, and sometimes vomiting. The subsequent sudden attacks of bleeding are not essentially different from the primary. They determine apoplectic or convulsive attacks with secondary palsies or contractions, sometimes delirium, but for the most part general paralysis and coma. These phenomena occur suddenly after a varying duration of the general symptoms, especially of pain in the head, and usually prove speedily fatal. The course is generally chronic; in rare cases it may end in recovery, the symptoms at any rate ceasing, although the morbid formation remains. The chief causes are injuries to the skull, the abuse of alcohol, rheumatism, and erysipelas of the scalp.

BABINGTON, T. II., M.D.; CUTHBERT, A., M.D.—*Paralysis caused by working under Compressed Air in sinking the foundations of London-derry new Bridge.* Dublin Quar. Jour. of Med. Sc., Nov., 1863.

The men worked under a pressure varying from twenty-seven pounds on the square inch to thirty-eight or forty-three pounds. The effects experienced by the workmen were pain in the ears, which soon passed away, or was relieved by the act of swallowing; headache, increased sense of hearing, anomalous pains in the limbs, occasionally bleeding from the nose, and a feeling of general distress and uneasiness. These symptoms were all much increased when the transition from one medium to another was too rapidly effected. The state of the general health and previous habits of the workers appeared to exercise considerable influence on the symptoms. These symptoms were felt on first passing into the compressed air, but to a much greater extent on leaving it and passing into the external air. In this stage the serious and fatal effects were produced. Six cases are recorded, four of which proved fatal. Two fell down suddenly in a state of insensibility on reaching the outer air. They were totally insensible when seen, the surface cold and livid; in one the right side of the face was partially paralysed; the pulse very weak, fluttering, and irregular—about 150; respirations very irregular; teeth firmly clenched; slight movements of the legs when the soles of the feet were rubbed. Blood was taken from the arm to the amount of $\frac{3}{4}$ xij; it was very black and viscid. They both sank in twenty-four hours. Two others were semi-comatose at first, able to answer questions on being roused, but speedily relapsing into insensibility. The comatose symptoms passed off in about eighteen hours, when the lower part of the body was found to be paralysed both as to motion and sensation. In one the paralysis extended as high up as the fourth rib, in the other to the eighth dorsal vertebra. There was incontinence of urine and fæces. Death occurred from bed-sores. A fifth case was not taken ill suddenly; he was found some hours after coming out of the cylinder much depressed, but quite sensible, complaining of severe pains in his legs and thighs, very sharp and shooting. He was quite unable to walk, and his legs and feet were cold and numb, so much so, indeed, that he burned his toes a good deal without being at all aware of it. With internal and external stimulation, he recovered in two days. There were many other cases of slight paralysis and muscular pains, and other anomalous nervous affections. The authors refer the symptoms in the fatal cases to rupture of small vessels in the brain or cord, owing to the removal of pressure. There was no noxious element in the condensed air. Five Arabs in Egypt died in a similar way; blood issued from their noses, mouths, and ears.

LEUDET.—*On Congestion of the Spinal Cord after a fall or violent exertions.* Arch. Gén., May, 1863. Schmidt's Jahrb., vol. 120, p. 185.

The presumed causes are not followed immediately by any signs of concussion, but after a completely free interval of several hours or days a gradually increasing palsy of the lower and even of the upper extremities commences, which is followed by diminution of sensibility in the paralysed parts, by pain, generally not intense, in the vertebral column, in the joints, and in the course of the nerve-trunks. Sometimes there is also paralysis of the bladder, convulsions, and impairment of vision. All the symptoms

vanish in from three to fifty days under local antiphlogistic treatment early applied.

RUSSELL.—*Cases illustrating the influence of Exhaustion of the Spinal Cord in inducing Paraplegia.* Med. Times and Gaz., Oct. 31st.

Russell records three cases in which venereal excess produced more or less complete paraplegia. In one, which ended fatally, the nerve-tubules of the spinal cord a little above the lumbar enlargement, were in an imperfect atrophic state, and large collections of oil-globules existed in the walls of the minute vessels. Abundance of large granule-cells, with free oil-globules, existed in all parts of the cord, more especially in the lumbar enlargement.

RUSSELL, REYNOLDS.—*Cases of Paralysis.* Lancet, Dec. 12th.

In Case 1 there was paraplegia, which supervened without apparent cause, and disappeared in about six months under the use of strychnia and electricity.

WEBER, H., M.D.—*A Contribution to the Pathology of the Crura Cerebri.* Med.-Chir. Trans., vol. xlv, p. 122.

The patient, a male, æt. 52, affected with disease of the aortic valves, and rigidity of the arteries, was subject to headache and disturbed sleep during the last years of his life. About two months before death he was suddenly seized with paralysis of the right side of the body, producing almost total loss of motor and considerable impairment of sensory power. At the same time the muscles supplied by the third nerve of the left side were also paralysed. The uvula was drawn to the left, the right half of the palate was pendulous. He died of broncho-pneumonia, after slight but perceptible improvement in the phenomena of paralysis. The intellectual faculties were quite unaffected, as also the special senses. There was imperfect and less persistent paralysis of the muscles of the trunk and of the fifth, of the portio dura of the seventh, and of the ninth cerebral nerves of the same side; the affection of the pneumogastric nerve manifested itself in the more than usually slow and irregular action of the heart during the first days after the seizure, and to the impaired action of this nerve, as well as of the sympathetic, Weber ascribes the disposition to the fatal pulmonary inflammation. The participation of the sympathetic was further evinced by the increased temperature of the paralysed side. At the post-mortem an oblong clot of blood was discovered in the internal half of the left crus cerebri, about 0.6 inch long, and 0.25 inch broad, and almost as deep; it was situated very close to the internal and inferior surface, being separated from it only by a thin layer of nerve substance; its commencement was immediately in front of the pons. Microscopically examined, the clot presented many shrivelled blood-globules, besides many apparently unaltered ones. The surrounding yellowish and tense tissue contained scarcely any nerve-fibres, but much connective tissue. In the left third nerve many oil-globules, and granules of various size, and also small granular corpuscles, were found, which were absent in the right nerve; the fibres in the left nerve were scanty and broken down. All the other parts of the encephalon were normal. No circus movements were observed in the case, nor in one cited from Andral, such as are produced

in animals by section of one crus cerebri. In a case, however, put on record by Dr. Stiebel, where the left crus was extensively diseased, its diameter being more than twice that of the right, the head was always turned to the right, and there was no hemiplegia.

JONES, T.—*On some points in connection with Cerebral Hæmorrhage.* Brit. Med. Jour., Feb. 7th; July 25th; Nov. 7th.

Jones reports on 40 fatal cases occurring at St. George's Hospital. As regards age, he finds that the majority of cases (13) occur between the ages of 40 and 50, 10 between 50 and 60, and 9 between 60 and 70. Males are much more liable to the disease than females (29 to 11). His conclusions from careful pathological examination of the cases are—(1) that cerebral hæmorrhage, when associated with renal disease, is almost always found to be dependent upon rupture of one or more of the cerebral arteries, in consequence of certain morbid changes having taken place within their walls; (2) these changes in the walls of the vessels are induced by the altered state of the blood, the effect of advanced disease of the kidneys; (3) the enlargement of the heart is the immediate effect of the renal disease, conjointly, perhaps, with the alterations in the coats of the vessels. Premonitory symptoms were more frequently present than absent. They were present in about 46, and absent in 36 per cent. Their duration varied from a few minutes to three months. They mostly consisted of abnormal sensations, especially headache. With regard to the pupils, Jones states that they are altered in the majority of cases of cerebral hæmorrhage. Of the modifications, contraction is the more frequent variety. Contraction of the pupils coexists with paralysis, of which hemiplegia is the most frequent form. Paralysis is more frequently associated with dilatation of the pupils, and that more frequently *general* in its extent. Alterations of the pupils bear no relation to the seat of the paralysis when partial. Contraction of the pupils almost always depends upon lesion in the membranes; dilatation upon lesion in the substance of the brain, when sufficient to exert a considerable degree of pressure.

WILKS.—*Cases of Tubercular Meningitis in Adults with remarks on the Obscurity of the Early Symptoms.* Med. T. and Gaz., Sept. 12th.

Wilks remarks that there is often an irritability about the subject of tuberculosis which contrasts in a most marked manner with the torpor of the fever patient, and to this he draws particular attention, as he has found it of the utmost service in attempting to distinguish between the two disorders. When these are at their height, the difference is often very striking, the one with inflammation of the brain being distressed by the slightest movement; he coils himself up in bed, is peevish, and wishes only to be left alone. At the same time the surface of the skin is often remarkably irritable, so that the patient calls out when touched, often feels cold, and shivers when his skin is very hot. In the case of fever there is none of this irritability; the patient will rather aid the examining physician if he be able to do so. Wilks states that he is inclined to believe in the rapid formation of the tubercle, and that the pyrexia attendant on its development is not, as often supposed, the result of the irritation which it has produced,

WAGNER, E.—*On Syphiloma of the Nervous System.* Arch. d. Heilk., iv, 1863. Schmidt's Jahrb., vol. 118, p. 40.

Wagner notices the occurrence of these tumours in the dura mater, the pia mater, and the cerebral substance. In the latter situation they are probably much more frequent than has been supposed. He thinks that most of the so-called cerebral tubercles, occurring without any trace of tuberculosis in other parts, especially when they are connected with the pia mater, are of syphilitic nature, and this even when there are no other manifest signs of syphilis. Wagner has met with an instance in which the spinal cord was affected, but not one in which the nerves were.

LABORDE.—*On the Alterations produced by Age in the Capillaries of the Brain, and on their relation to Senile Ramollissement.* Gaz. de Paris, 26, 1863. Schmidt's Jahrb., vol. 120, p. 182.

Laborde examined the changes taking place in the cerebral capillaries of old persons dying with softening of the brain, and found four degrees of morbid affection. In the first one the wall only presents a beaded dilatation; in the second the dilatation becomes general, and translucent deposits appear in the wall; in the third the capillaries become prodigiously enlarged, and their wall is almost entirely occupied by the above-mentioned fatty and calcareous deposits, which also penetrate into the interior of the vessels and blend with the remains of blood-globules; in the fourth degree the vessels burst, and only their débris are visible. This degeneration of capillaries is more frequent in the cortical layer of the hemispheres than in the thalami optici and corpora striata, the crura cerebri, and the pons. In order to ascertain the ages at which these changes commenced, Laborde examined the brains of 60 children, 60 individuals between 15 and 55 years of age, and 100 from 55 to 100. The result is as follows:—(1) Up to 45 years of age the capillaries of normal brains show no important change. Until the third or fourth year of life there are certainly found, especially in the cortical substance, beaded dilatations, with scattered deposits and enlargement of the nuclei in the wall, but as these are not found at a later period, they are doubtless connected with development. (2) After the fifty-fifth year it is usual to find the first two grades of vascular alterations, sometimes also the third, and almost invariably the first. (3) These changes are especially marked in the cerebral cortex and in the corpus striatum and thalami optici, but occur also in the rest of the brain. (4) Between the fortieth and fifty-fifth years it is exceptional to meet with the above changes. This is remarkable, because during the very same period the arteries at the base are very frequently atheromatous. Even after the fifty-fifth year alterations in the capillaries do not necessarily coincide with atheroma (of the larger vessels), so that it appears that the two sets of vessels are independently affected. (5) Wasting of the nervous elements in the vicinity of the diseased capillaries especially proceeds *pari passu* with the vascular degeneration.

MEYNER, TH.—*Case of Abscess in the Pons Varolii.* Oesterrh. Ztschr. f. prakt. Heilk., ix, 24, 1863. Schmidt's Jahrb., vol. 120, p. 183.

The abscess, of the size of a hazel-nut, was situated rather to the left side. It had caused paralysis of the right facial nerve, and of the lev. palp. branch of the right third, and produced tonic contraction of the masseter. There was no affection of the limbs, which Meynert explains by the circumstance that the longitudinal fibres in the pons were not destroyed, only somewhat displaced.

RINDFLEISCH, Ed.—*On Histological alterations in Gray Degeneration of the Brain and Spinal Cord.* Virchow's Archiv, xxvi, p. 474, 1863. Schmidt's Jahrb., vol. 120, p. 183.

From examination of a case of tabes dorsalis, Rindfleisch describes the disease as essentially consisting in a growth of fine-felted connective tissue, which commences with a remarkable thickening of the coats of the small arteries. The nervous tissue becomes atrophied and destroyed.

HEINE, C.—*On Infantile Paralysis.* Med. Tim. and Gaz., Nov. 28th, Dec. 5th.

Heine believes there are different kinds of paralysis in infancy as well as in later periods of life, but affirms that the true infantile paralysis to which he refers, and which is undoubtedly the most common, is of spinal origin. After describing the conditions observed during life, he gives some account of four post-mortem examinations. The first of these was that of an adult who had had marked paraplegia from infancy; the cord was found greatly atrophied and shrunken from the eighth pair of dorsal nerves downwards, and the atrophy involved also the peripheral nerves. In the second case, one of paralysis of the whole of one leg, the atrophy and morbid change of colour were principally confined to the anterior roots of the lumbar and sacral nerves of the right side. In the third case, one of hemiplegia, examined a few years after the appearance of the affection, the remains of a former meningitis were found in an old, solid, and gelatinous pseudo-membrane, lining the whole arachnoid of the cord, so that the latter was strongly constricted, and started out when the membrane was cut into. The membranous exudation spread over the roots of the nerve-trunks of the paralysed limb, and reached the cauda equina. The last case was that of a child, æt. 10 years, with paralysis of both lower limbs and great deformity of the knees and feet. Tubercles were found in the cord on microscopic examination.

BOUCHUT.—*On the Contagiousness of Nervous Diseases.* L'Union, 57, 58, 60, 1862. Schmidt's Jahrb., vol. 117, p. 86.

Bouchut records two epidemics of this kind occurring at Paris. One, in 1840, appeared among 400 females employed in making shirts, of whom 85 were attacked with loss of consciousness and slight convulsions. Its further spread was arrested by exclusion of those who were once affected from the work, and putting in lower windows. The second, in 1861, occurred during the preparation for the first communion in the church of Montmartre. Out of 150 girls, above 40 were attacked with loss of consciousness and convulsions, but not one of the same number of boys who were present at the same time.

ANSTIE, F. E.—*On the Therapeutical Value of Cod-liver Oil in Chronic Convulsive Diseases.* Brit. Med. Journ., March 7th.

Anstie states that he has found the oil more constantly useful than any other medicine in paralysis agitans, simple epilepsy, chorea, and mercurial tremor. Out of 20 cases of epilepsy, 7 completely recovered, and several others were more or less benefited. In 3 of these cases the general nutrition of the body had been excellent, and only that of the nervous system appeared deficient, so that the conclusion appeared inevitable that the oil had especially addressed itself to the nervous centres. He discouraged strongly the search after specific remedies for convulsive affections, and recommended a rational treatment.

EDIN. MED. JOUR., Jan., contains a valuable critical review of syphilitic affections of the nervous system.

GRIESINGER.—*On the Diagnosis of Cysticerci of the Brain.* Archiv. d. Heilkunde, 1862. Brit. and For. Med.-Ch. Rev., Jan.

Griesinger, after carefully analysing between 50 and 60 cases of this disease, arrives at the following general conclusions:—(1) That the diagnosis of cysticercus must be based on a twofold series of considerations—the one resting on the improbability of any other cerebral affection, the symptoms not corresponding; and the other on the presence of a definite series of symptoms. (2) Cases of convulsive attacks, being more or less epileptic, are chiefly suspicious which come on in a sub-acute way, or quickly increase to a certain pitch, and presently, after a steady increase in number and intensity, assume the general appearance of a very severe cerebral disease. (3) The probability of cysticercus is increased if these symptoms come on in patients of adult age, being previously healthy, or in men in whom neither hereditary disposition nor traumatic nor syphilitic influences, nor lesions of the vessels or heart, could have given rise to them. (4) A suspicion of this disease would be aroused if, under the circumstances last named, mental depression and confusion, accompanied with giddiness, loss of sight and hearing, headache, coma, &c., occur. (5) Symptoms of cerebral lesion, if conjoined with paralysis, are to be looked upon almost with certainty as not having origin in the cysticercus. (6) The manifestation of cysticerci in certain parts under such circumstances naturally elevates the probability into certainty. He divides the various collected cases into five categories:—(a) Those which run their course without any or with but very obscure symptoms. (b) Cases in which epilepsy exists without mental disturbance; in these cases death occurs either independently of epilepsy, or so far connected with it that the epileptic symptoms first set in shortly before death, or a kind of cerebral disturbance is developed from one or more of the attacks which leads to death. (c) Cases in which, along with epilepsy, psychical disturbance is at the same time set up, whose continuation and character warrant the designation of a mental disease. The psychical disturbance is expressed at one time as mania, true delirium, or confusion of mind; at another, as obstinacy or imbecility, and appears either before or after epilepsy. (d) Cases in which epilepsy is wanting, but in which the mental disturbance exists, accompanied frequently by other motor

and sensitive disturbances. In some of these cases other pathological changes within the cranium appear to form the basis of the psychical disease. (*e*) There are cases in which neither epilepsy nor mental disturbance exists, but cerebral symptoms of irritation or torpor, which come on shortly before death or assume a chronic form. The cysticerci were situated chiefly at the periphery of the brain, in the gray cortical layer; whence he concludes that they had not been themselves carried thither, but their germs had. The epilepsy from cysticercus is in all respects like cerebral epilepsy, and the psychical disturbances in general have nothing characteristic about them. Very often, also, other cerebral symptoms coexist, such as squinting, alteration in the pupils, avoidance of light, headache, coma, anomalous sensations in the limbs, &c. The only exceptions to the location of the cysticerci in the cerebral membranes and in the cortical gray matter are where they are very numerous in the brain; if the number is moderate, it is extremely rare to find even a few imbedded in the white matter (not merely projecting into it out of the gray), and they are never found solely in the white matter. Those cases only where the cysticerci were situated more deeply in or near the large cerebral ganglia, or in the basal parts of the brain had paralysis. The predominant symptoms were in almost all cases those of so-called cerebral irritation, partly in the way of motor, partly in the way of psychical, disorder. In 16 cases out of 54, epileptiform paroxysms occurred, and terminated fatally after other grave symptoms had supervened, as delirium, sopor, and extreme debility. In two instances the rapid course of the disease appeared certainly to depend on the rapid growth of the vesicles. Cysticercal epilepsy is mostly a disease of rather advanced life. In 43 cases where the age is accurately stated there were only 3 under 20 years, 15 between 20 and 40, and 25 over 40 years of age. More males are attacked than females, (60 per cent.) The number of the cysticerci has a considerable influence on the symptoms, especially on the occurrence of mental disorder. A few (1—3) vesicles were present in 20 cases, and of these there were 3 without symptoms, 8 with the uncertain and inconsiderable symptoms of group *e*, 5 with epilepsy, and 6 with mental disease, 2 of the latter being epileptic. A moderate number of vesicles (5—60) were present in 28 cases; of these 2 had no symptoms, 7 belong to group *e*, 9 were epileptic, 13 insane, 3 of these being also epileptic. Very numerous, sometimes several hundred, vesicles were present in 8 cases; of these none were without symptoms, only 1 belonged to group *e*, 2 were epileptic, 6 insane, one of these also epileptic. Though the general rule is as above stated, exceptions occur, which appear to depend in great measure on the condition of the cerebral substance, which is not directly affected by the disease. If acute tumefaction of the brain sets in during the last days of life, the surface of the organ is pressed against the skull and becomes pale and dry, and there ensues a rapid aggravation of all the symptoms; whereas atrophy of the brain has an opposite effect, and no signs of cerebral pressure are often apparent.

Records twelve cases seen by him at Hamburg. He confirms Griesinger's statement as to the preference of the cysticerci for the cortical part of the brain, but seems to have met less frequently with epilepsy and mental disturbance, and more often with paralysis of one side.

BROWN-SÉQUARD.—*Med. Tim. and Gaz.*, March 14th.

States that muscular ataxy, in his view, is only a peculiar symptom which may be associated with various diseases, and that the treatment must vary accordingly. When it is connected with lesion of the posterior columns, and with many other affections of the spinal cord, including epilepsy, where no inflammation exists, nitrate of silver, in doses of gr. $\frac{1}{10}$, will prove of the greatest use. If this medicine be given in these doses, and omitted occasionally for a week during the course of the treatment, it will cause no discoloration of the skin. This result may be equally avoided by giving the oxide of silver in doses of from gr. $\frac{3}{4}$ to gr. v three or four times a day. In the treatment of meningitis or neuralgia, he remarks that patients who cannot bear a double dose of belladonna, or any other narcotic, will tolerate very well a full dose of two taken together. Of the so-called essential paralysis of children, he observes that, if it really exist, it is exceedingly rare, and that a great majority of the so-called cases are really the result of a lesion of some part or parts of the cerebro-spinal axis. Post-mortem examinations have frequently afforded evidence of effusions of serum within the dura mater and ventricles of the brain, and, though more rarely, of inflammation of the substance either of the brain or cord. A case of facial paralysis showing the extensive reflex effects of cold water was also brought forward. The patient, aged 44, had got very wet, and became affected the following night. He was unable to shut the right eye; and the tongue and lips being affected, he could not pronounce certain letters; for the same reason, drinking was difficult; there was slight motor paralysis of the right side of the tongue; the sense of taste on the same side was lost; the eye was very sensitive to light; the sense of hearing on the right side was lessened; there was hyperæsthesia on both sides of the face, but the sense of feeling in the tongue was normal, and there was no tinnitus aurium and no headache. The power of the nerves on the left side corresponding to those affected on the right was also slightly impaired. Brown-Séquard regards the affection as not centric, but entirely peripheral, because there was no anæsthesia of the tongue, no loss of power of, and no abnormal sensation, in the limbs. With regard to syphilitic diseases of the nervous system, it was contended that if a patient has had primary disease, and the nervous system is affected in several distinct parts at the same time, the occurrence of secondary symptoms is no necessary link in the chain of evidence.

WUNDERLICH, C. A.—*Arch. d. Heilk.*, p. 27, 1863.

Records two additional cases of the efficacy of nitrate of silver in progressive spinal paralysis.

RADCLIFFE, C. B.—*Brit. Med. Journ.*, November 7th.

Strongly recommends the employment of the hypophosphites in ten-

various other asthenic conditions of the nervous system. He also prescribes alcoholic stimuli, and plenty of fatty matter in the food, but discourages the use of sedatives. Sugar is injurious in rheumatic cases.

HELLER.—Wien. Med. Wochenschr. Brit. Med. Journ., January 3rd.

Gives the following account of the analysis of a boy's urine, *æt.* 6, who died of hydrophobia. The sp. gr. = 1036. It was very acid; deposited a very large amount of uric acid, no urate of ammonia. The urea was greatly increased, also the sulphates and the earthy phosphates. The chlorides were slightly diminished; the alkaline phosphates slightly increased. There was no sugar, and only a trace of albumen and carbonate of ammonia.

BENEDIKT, M.—*The method of Electrical Examination of the Nervous System for Diagnostic Purposes.* Allg. Wien. Med. Zeit., viii, 18, 19, 1863. Schmidt's Jahrb., vol. 120, p. 209.

Benedikt affirms that in electrical testing of different parts of a nerve, when paralysis exists in the parts supplied by it, different parts react differently. There are paralyses which declare themselves only when the muscles are faradised, the voluntary power remaining perfect, as in the period of recovery from saturnine and traumatic paralyses; others, again, in which only the voluntary power is defective, while stimulation of the nerve-trunk or of the muscle produces contraction, as in peripheral rheumatic and cerebral paralyses; lastly, some where only direct stimulation of the muscle itself, or of the nerve-trunk, produces movement, but the will is inoperative, as in certain peripheral paralyses. Benedikt therefore advises us in every instance of paralysis to subject successively the muscles, the nerve-trunk, the plexus from which it originates, and the anterior spinal roots (!), to the induced or constant current. If the muscle does not contract in a normal manner when directly stimulated, but does so when the stimulus is applied to the nerve or the centre, it must be healthy, and the cause of the deficient contraction can only exist in defective excitability of the intra-muscular motor-nerve-fibres. In cases where the muscle and nerve react to peripheral excitation, but the voluntary power is lost, there must be a failure of the conducting power in the nerves. The degree of excitability may be estimated by the amount of contraction, and its increase by the occurrence of contraction on opening the circuit. Changes in the conducting power of the nerves declare themselves by changes in the rapidity with which impulses are propagated, and with which, consequently, contraction ensues. In the case of *anæsthesia* we must proceed in a similar way. If a sensory nerve, when stimulated at any part, gives rise to normal sensation, we are sure that the cause of the disorder is situated more peripherally than the point acted upon; and we must advance more peripherally till we find where stimulation fails to produce the normal effect. The condition of the vaso-motor nerves may be tested in the same way, their action being judged of by the occurrence of pallor. Benedikt finds that morphia greatly increases the electrical excitability of nerves, while the relaxing effect of atropine is increased by previous galvanization. The latter is often necessary before the former can act beneficially.

FRASER.—Med. Tim. and Gaz., February 7th.

Records a case of trismus algidus resulting from exposure to wet and cold, and becoming so severe that the jaws could only be separated by considerable force. He was treated with Ext. Cannab. Ind., commencing with gr. $\frac{1}{4}$ o. h., and increasing the dose to gr. iij o. h. This caused intoxication in about twelve hours, which soon disappeared on leaving off the drug. Altogether, 115 grains were taken during seven days of treatment. He improved gradually, and made a good recovery. He had had a similar attack, but less severe, a year before, from exposure to cold and wet, which ceased in three weeks spontaneously.

SPITZER, C.—Oesterrh. Ztschr. f. prakt. Heilk., viii, 50, 1862.

Records a case of traumatic tetanus in which curare was used unsuccessfully. It was injected into the subcutaneous tissue, dissolved in alcohol. After three grains had been used the symptoms remitted, but returned severely, and the patient died on the tenth day from the injury.

FRONMÜLLER.—On the *Soporific Power of Lactuca*. Deutsche Klinik, 41—44, 1862. Schmidt's Jahrb., vol. 117, p. 25.

From 149 observations made with various preparations, Fronmüller concludes—(1) that English or German lactucarium is the most efficacious; (2) that the dose must be from 10 to 30 grains, if it is to act effectually; (3) that it is the mildest of all the narcotics, but still may give rise to giddiness, headache, and stupor.

SELLER, W.—On *Delirium Tremens, as distinguished from other Effects on the Mind, real or apparent, of Excess in Drinking*. Edin. Med. Journ., November, 1863.

Seller would refuse the name of delirium tremens—(1) to abortive cases, or threatenings of this disorder; (2) to cases of insanity, either temporary or more permanent, the immediate precursor of which is excessive drinking; (3) to mere fits of drunkenness, with much violence or extravagance, but without distinct delusion. He illustrates these states by narrating various instances of each. Delirium tremens presents, he says, so great a similarity in its course, under the most opposite circumstances, as to approach to the character of a specific disease, like smallpox or measles, in the train of symptoms exhibited.

OGLE, J. W., M.D.—Med. Times and Gaz., December 19th.

Records three cases of delirium tremens in which opium appears to have been of essential service. In the last case the attack (the first one) had commenced fourteen days before his admission; he had opium in divided doses for five days, with Ant. Pot. Tart., gr. $\frac{1}{4}$, every four hours, for the last day and a half. Morphia, gr. iss, was now given, and repeated in six hours, and sulphuric ether and carbonate of ammonia given every three hours. He improved steadily from this time, the morphia being given for four successive nights. One night subsequently, when it was omitted, he was more restless.

PIORRY.—Jour. de Méd. et de Chir. pratiq., July, 1863.

Recommends ammonia administered internally as a touchstone in all

cases of severe nervous disorders occurring in an individual accustomed to alcoholic excess. If the symptoms result from the abuse of alcohol, they are dissipated under the use of ammonia with remarkable rapidity; if they persist, their cause must be sought elsewhere. He gives the case of a male, æt. 45, who drank 2 to 3 litres ($3\frac{1}{2}$ to 5 pints) of wine daily, his health, however, remaining good. One day he found, on getting up, a stiffness in the left arm and leg, such that he could not dress himself. He had previously had pains in the right side of the head, with tremor of the limbs. Bleeding, sinapisms, frictions, had been of no benefit. On his admission into La Charité he could neither walk nor use his left hand, and his sensory power was also much impaired. In three days after the administration of ammonia (Liq. Ammoniae) he was remarkably improved; he could walk, and use his arm. There only remained of his former condition a little tremor, which made him walk rather lame.

TÜRCK, L.—*On Neuralgia and Hyperæsthesia of the Throat.* Wien.

Allg. Med. Zeit., vii, 9, 1862. Schmidt's Jahrb., vol. 117, p. 31.

Türk describes an affection of the lateral parts of the base of the tongue, the tonsils, and the sides of the pharynx. These parts appeared normal, but were the seat of pains which existed in both, but were always greatest on one side. Sometimes there was difficulty in swallowing, a sensation as of a tumour or a foreign body in the throat, or of dryness. Of 6 cases 2 were males of 37 and 60 years; the others were females. In 2 of the latter the affection had replaced a neuralgia, an intercostal or hemicranial. In all the cases the pain was increased by continued talking or singing, or by swallowing too hot a substance. The only treatment mentioned consisted in resection of a piece of the gustatory nerve, and cauterization with solid Argenti Nitras.

PFÄFF.—Varges Ztschr., N. F. i, 4, 1862. Schmidt's Jahrb., vol. 117, p. 163.

Records evidence as to the good effect of Ol. Terebinth. in severe propalgia. He gives five drops ter die, internally, and applies it also externally to the painful part.

FINCO, G.—*Cauterization of the Ear in Sciatica.* Gaz. Lomb., 38, 39, 41, 1860. Schmidt's Jahrb., vol. 117, p. 165.

Finco relates several cases, and then gives an account of his whole experience on this point. He has performed the operation in 48 cases: in 30 with complete, in 10 with incomplete, in 8 without any, success. In these last cases there were always grave complications—scurvy, inflammation, &c.—after the removal of which the sciatica in some instances disappeared spontaneously. In all the cases except in one the cauterization was preceded by energetic antiphlogistic treatment; in some the cure was completed by mercurial or belladonna ointment; and in seven, where the operation only effected an improvement, these external applications, combined with suitable internal remedies, speedily got rid of the disease. The operation was repeated only three times, and in all with complete success. Twice the sciatica, after one side had been cured by the operation, reappeared after some time (three months or three years) on the other, and again yielded to the same proceeding.

WORMS, J.—*Paralyses from Cold.* Gaz. Hebdom., x, 16, 1863. Schmidt's Jahrb., vol. 119, p. 292.

Worms regards such paralyses as distinct from rheumatic. Their characteristics are that they set in speedily after the operation of the exciting cause; that the palsy varies in extent, but never affects the muscles alone, but always, at the same time or previously, the sensibility, or in some cases the latter alone. If the paralysis first appears on the face or trunk it usually remains limited to it; but if it begin in the hands or feet, it is apt to extend further. It is mostly of very short duration; if it continues long, some other cause is in operation. Treatment consists in vapour baths, frictions, and especially electricity. He gives the case of a soldier, æt. 25, who was exposed to cold after being much heated. The same evening anæsthesia commenced in one foot, and extended itself by the ninth day over almost the whole body. Paralysis of motion was also almost universal, so that respiration was performed only by the diaphragm. The facial and third nerves were paralysed, and smell was lost; speech was much impaired. In a month from the commencement of his illness the patient had quite recovered.

SKODA.—Wien. Med. Halle iii, 13, 1862. Schmidt's Jahrb., vol. 119, p. 294.

Records a case of paralysis agitans, affecting both hands, in a female, æt. 32. Cutaneous sensibility was a little impaired, the speech was rather stammering, the vision and intelligence perfect. The patient continued in this state four months, and then died of variola. The brain was found tough, the walls of the ventricles, the fornix, pons, medulla oblongata, and spinal cord, were surprisingly stiff; both optic nerves were stiff and flattened. In some opaque reddish parts of the brain the nerve-elements were destroyed by embryonal connective tissue; in the pons and medulla there were growths of the same tissue, and the vessels were obliterated. The muscles were in a state of fatty degeneration; the neurilemma of the nerves of the upper extremities was thickened.

JONES, T.—*Report of a Case of Catalepsy, with Observations.* Brit. Med. Jour., June 6th.

A male, æt. 60, strong made, tall, suffered from the effects of strong mental shock for fourteen days; had then hallucinations of vision and hearing for two or three days, after which he was suddenly seized with tetanic rigidity of all the muscles, which caused him to be fixed in the position in which he happened to be at the time of seizure; subsequently the limbs retained any position in which they were placed; there was partial loss of consciousness, but he was able to walk up stairs; and if pushed so as to make him lose his balance, he made sufficient exertion to regain his equilibrium. His muscles contracted well under galvanism. He had perfect control over the sphincters. His urine was natural. In about twenty-two hours the attack passed off, and did not recur. Galvanism and diffusible stimulants were beneficial; the cold douche did not appear to be so.

VOGT.—*Catalepsy at Billingshausen as an Endemic Affection.* Würzb. Med. Ztschr., iv, 3, 1863. Schmidt's Jahrb., vol. 120, p. 301.

It appears that catalepsy has long been prevalent at Billingshausen,

which lies near Würzburg, and has a population of peasants, who are well off; but who intermarry into each other's families. The affected individuals, who are called there "the stiff" (Starren), are suddenly seized by a peculiar sensation in their limbs, upon which all their muscles become tense, their countenance deathly pale, they retain the posture which they first assume, their fingers are bent and quiver slightly, and the eyeballs in the same way, the visual axes converging; their intellects and senses are normal, but their speech consists only of broken sounds. The attack ceases in one to five minutes, and the body becomes warm. A chill is commonly said to be the exciting cause. The attacks come on in all places and during all occupations, but with varying intensity. The disorder is hereditary in families, but often passes over one generation, and is rendered more intense by the marriage of two persons thus affected. Half of the population, men as well as women, is cataleptic. All the inhabitants are small and deformed, but not mentally inferior to those of adjacent districts.

PEACOCK, T. B.—*Statistical Analysis of Cases of Chorea.* Brit. and For. Med.-Chir. Rev., Oct., 1863.

Peacock's conclusions are as follows:—(1) The disease existed in twenty females and in only eleven males. (2) It is much more frequent from five to twenty years of age, but occurs at all ages. (3) It is about equally frequent in young boys and young girls. (4) From the age of ten to that of twenty, the female sex is much more liable to the disease, in the ratio of ten to four. (5) Some form of rheumatic or cardiac affection is most frequently associated with chorea; in fourteen cases it was present in five. (6) The most frequent exciting causes of chorea are more or less violent mental impressions—fear, grief, excessive joy, &c. Such influences were operative in 38·7 per cent. of the cases, but were in several instances so slight that there was evidently an undue susceptibility. (7) The indications for treatment are to relieve gastro-intestinal irritation, quiet the nervous system, and improve the general power and condition of the blood. The pupils in the active stage of chorea are very large, and the irides nearly insensible to light. (8) There is not much difference in the facility of cure in cases of first attack or of relapses or subsequent seizures. The age also does not influence the result, provided the patients are not in advanced life. (9) Under any course of treatment chorea is prone to relapse.

BRICHETEAU—*Gaz. des Hôpit.*, No. 46.

Observed in one of Monneret's wards an epidemic of chorea. In the course of five days after the admission of a young girl suffering from most intense chorea, eight patients already present in the ward contracted the disorder, and in all probability the contagion would have extended more widely had not its influence been arrested by isolation of the patients.

KIRKES, W. S.—*On Chorea; its relation to Valvular Disease of the Heart, and its Treatment.* Med. T. and Gaz., June 20th, 27th.

Kirkès believes that whenever chorea occurs in association with acute rheumatism, the valves of the left side of the heart are inflamed, and that therefore the association is not between chorea and rheumatism, as usually believed, but between chorea and valvular disease of the

heart, excited by rheumatism. He affirms also that cases of chorea not unfrequently occur in which no other attendant morbid condition can be found than that of valvular disease of the heart. Sometimes such cases happen in individuals belonging to a rheumatic family, and in whom, therefore, the rheumatic diathesis may be assumed to be in some degree operative; sometimes they happen in association with some of the trivial temporary disorders, as worms and the like, which have been mentioned as occasional attendants on chorea. Very often in such cases no evidence of rheumatic tendency can be detected to account for the cardiac disease, nor any proof of the existence of any other ailment likely to explain the chorea. After detailing various points relative to puerperal chorea, he relates two cases of this kind in which fibrinous vegetations were found on the aortic and mitral valves. After expressing his opinion that the affection of the valves plays an important part in the chorea, he inquires whether the chorea produces the valvular disease, or *vice versâ*, or whether both are the result of some common cause. He rejects the first view as unsatisfactory, and thinks there are many cases to which the third cannot apply. He adopts the second view, viz., that the valvular disease is the medium through which the nervous phenomena are developed in those who by hereditary or acquired tendency are specially predisposed thereto. Partly by the mere circulation of morbid blood through the nervous centres, partly also by temporary obstruction in the minute capillaries, occasioned by fibrinous particles arrested therein, the irritation leading to the development of the choreic or other analogous phenomena may be accounted for. After noticing the general enfeeblement and paresis of the nervous system, he proceeds to remark on the frequency of softening of the nervous centres, which appears always to be of the pale kind. Sometimes the spinal cord alone, sometimes the brain alone, or parts of it, sometimes both these nervous centres, are thus affected. He thinks it reasonable to believe that some close relation exists between the softening and the chorea. The imperfect nutrition of the nervous centres renders them unduly excitable by even ordinary impressions, and thus predisposed, they are subjected to the additional disturbing influence of blood vitiated and rendered peculiarly irritating by the attendant rheumatic or valvular disease, which thus becomes mainly instrumental in developing the disease. As to treatment, if the diathesis be possibly rheumatic, alkalies should be employed; in other cases, all means which by promoting a better nutrition may improve the tone of the debilitated nervous system.

CHAPMAN, J., M.D.—*On a new Method of treating Disease by controlling the Circulation of the Blood in different parts of the Body.* Med. Times and Gaz., July 18th.

Chapman claims to have discovered that a controlling power over the circulation of the blood in the brain, in the spinal cord, in the ganglia of the sympathetic system, and through the agency of these nervous centres, also in every other organ of the body, can be exercised by means of cold and heat applied to different parts of the back. In this manner the reflex excitability or excito-motor power of the spinal cord, and the contractile force of the arteries in all parts of the body, can be immediately modified. In order to lessen the excito-motor power of the spinal cord only, he

applies ice in an indian-rubber bag, about two inches wide, along that part of the spinal column containing the part of the cord on which he wishes to act. On the same principle, the vitality of the spinal cord may be increased by applying hot water and ice alternately, each in an indian-rubber bag, if very energetic action be required; if less vigorous action be necessary, he applies ice or iced water only, using it several times a day, for a short time on each occasion, with a long interval between each application. If it be desirable to increase the circulation in any given part of the body, this can be effected by exerting a soothing, sedative, depressing, or paralyzing influence (according to the amount of power required) over those ganglia of the sympathetic which send vaso-motor nerves to the part intended to be acted on. This influence may be excited by applying ice to the central part of the back, over a width of from four to four and a half inches, and extending longitudinally over the particular segments of the sympathetic and of the spinal cord on which it is desired to act. For example, intending to direct a fuller and more equable flow of blood to the brain, he applies ice to the back of the neck and between the scapular; increased circulation in and warmth of the upper extremities are induced in the same way; the thoracic and abdominal viscera can be influenced in like manner by applications to the dorsal and lumbar regions; while the legs and the coldest feet ever felt can have their circulation so increased that they become thoroughly warm by an ice-bag applied to the lower part of the back. By thus acting by means of cold or heat, or both alternately or combined, on the spinal cord and ganglia of the sympathetic, Chapman has succeeded in completely arresting the fits of many epileptics, and in curing the following maladies:—Paralysis; long-continued and extreme headaches; prolonged giddiness; extreme somnolence; a feeling of want of firmness in standing and of security in walking; habitual hallucinations; loss of memory; weakness and dimness of sight; ocular spectra; inequality of the pupils; lateral anæsthesia; uncontrollable spasmodic opening and shutting of the mouth; cramps of the limbs (in two cases of the hands incapacitating the patients to continue their work; numbness of the fingers, incapacitating the patients to pick up small objects or to use a needle; paralysis of the bladder; incapacity to retain the urine more than a few minutes; profuse and too frequent menstruation; scanty and irregular menstruation; extreme menstrual pains; profuse leucorrhœa, with long-continued bearing down of the womb, and extreme pain of the back; habitual constipation; habitual diarrhœa; general coldness of the surface of the body, which has continued for many years; habitually and hitherto irremediably cold feet. For the cure of epilepsy he gives the following rules, the object of which is to lessen the excito-motor power of the cord by lessening the amount of blood circulating in it, and to prevent those spasmodic contractions of the cerebral arteries which induce the sudden loss of consciousness constituting the first phase of an epileptic fit:—(1) Apply ice to some one part or to the whole length of the back, and from two to eighteen hours a day, according to the special character of the case under treatment. (2) If the extremities be cold, to aid them in recovering their wonted warmth during the first day or two of treatment, by frequently immersing them in hot water, and by friction; also in winter by clothing the arms down to

the wrists and the legs down to the ankles in flannel. (3) As auxiliaries—(a) to take abundant physical exercise, and to use dumb-bells when practicable, or other special means of increasing the respiratory activity and of expanding the energy of the spinal cord; (b) so to cut or dress the hair that it shall not cover or keep warm the upper part of the back of the neck; (c) to exercise the brain daily and systematically in some healthy study, or, if this be impracticable, to ensure regular mental activity by means of some interesting employment; (d) to take care that the dress along the centre of the back be light and cool.

MERYON, E.—*Pathological and practical Researches on the various forms of Paralysis*. Brit. Med. Jour., May 16th, July 11th, 25th, Aug. 22nd, Oct. 24th, Dec. 26th.

Our limits do not permit us to do more than to refer to these valuable papers.

WIDAL.—*Case of Obstinate Hiccough, accompanied by serious symptoms, cured by Sulphate of Quinine*. Gaz. Méd. de l'Algérie. Lond. Med. Rev., April.

A man in Algeria was admitted under the care of Widal, suffering under the consequences of cerebral congestion. Five or six days after his admission, and after excess in alcoholic stimulants, he was seized with violent hiccough, the incessant spasms of which compelled him to remain in bed, and resisted all treatment by antispasmodics. The hiccough was so intense and noisy that it was heard outside the hospital. The number of diaphragmatic contractions reached fifty-five in the minute, and their energy was so great that all the muscles of the trunk participated in them. There was considerable dyspnoea, short inspiration, red face, white tongue, loathing of all kinds of food; pulse small—80. Infusion of orange, ether, and laudanum, a blister to the epigastrium, sinapisms to the extremities, were all used without success. Afterwards a pill was given, containing about one third of a grain of extract of opium, every two hours, and the blister was dressed with Morph. Mur. The next day, notwithstanding the enormous doses of opium, the hiccough continued with the same violence; the epigastrium was rather tender on pressure, and the patient had not slept an instant. The strength was gradually failing, the pulse was very small, and the loss of appetite was complete. Extract of belladonna in large doses, valerianate of zinc, subnitrate of bismuth, magnesia, aperients, and chloroform, were all unsuccessful. W. now had recourse to quinine—twelve grains at a dose. The next day it was announced that the hiccough had entirely disappeared three hours after the quinine had been taken, and the sleep and appetite were both restored. The quinine was taken every day in the same dose for three days, and the hiccough never returned, but the patient gradually recovered his strength. The hiccough had lasted, without intermission, nineteen days.

GREENHOW, E. W.—*On Diphtherial Nerve Affections*. Edin. Med. Jour., Aug., 1863.

Greenhow records five cases carefully studied by himself in the Middlesex Hospital. He premises some general remarks, from which we extract the more important. While he admits that nervous disorders by no means

necessarily ensue on every attack of diphtheria, and that their frequency and intensity is by no means invariably proportional to the severity of the primary disease, he yet states that the more severe the case is the more likely is nervous disorder, as a general rule, to occur, and the more intense is it also likely to prove. Between the disappearance of the primary and the appearance of the secondary symptoms of diphtheria, a brief period of convalescence, varying from a few days to a few weeks, usually intervenes. The occurrence of this interval shows that the nerve affections are not attributable either to the debility or anæmia induced by the disease, nor to the albuminuria which so often accompanies it. These nerve affections do not at once attain their maximum of intensity, but are progressive, although their progress even in the same sets of muscles, is seldom quite uniform. If several sets of muscles are attacked, the faucial or pharyngeal are almost invariably the first to suffer, next the sight becomes impaired, and subsequently the muscles of the tongue, of the lip, and of the upper and lower extremities, become affected in the order they are named, though it by no means follows that all of them should be affected in the same individual. Anæsthesia has coexisted with the paralytic affection of the fauces in all the cases that have come under Greenhow's observation; these organs, naturally so sensitive, become altogether insensible and callous, even to repeated and forcible pricks with the nib of a pen. In rare instances the speech becomes so inarticulate as to be almost unintelligible. It is worthy of note that the paralysis and anæsthesia are sometimes more complete on that side of the fauces which was most severely affected in the early stage of the disease. Sometimes the pharyngeal muscles are also paralysed, and there is then more or less difficulty (sometimes alarming) in swallowing. The impairment of vision, which is probably due to paralysis of the ciliary muscle, is, perhaps, the next most frequent of these disorders. It sometimes comes on very suddenly, but is preceded for a day or two by dilatation and sluggish action of the iris, or actual paralysis of that structure. The tongue, lips, and cheeks, are often affected, not only in their motor power, but in their sensory also. The parts are numb or cold, or experience a sense of formication or of scalding, and taste is sometimes lost. The upper extremities are either first affected or simultaneously with the lower. The affection of the limbs comprises more or less complete paralysis and anæsthesia, besides tenderness and abnormal sensations, such as formication and a perception of tightness in the fleshy parts. In one case there were also convulsive movements, resembling chorea, when the patient attempted to use the limbs. Just as the sense of scalding and numbness always begins in the tip of the tongue and subsequently spreads along the organ, so also these affections of the limbs are at their commencement peripheral. Tingling is experienced in the tips of the fingers, accompanied by numbness, rendering the patient unable to pick up small objects. Presently these symptoms extend to the wrists and upwards to the elbows, and even to the shoulders, being especially felt, however, on the palmar surface of the hands. The ailment runs a like course in the lower extremities, but also frequently extends to the muscles of the lower part of the back, and of the abdomen as high as the umbilicus. The limbs affected at first feel heavy and feeble, and a sensation of coldness often exists in them through-

out the duration of the paralysis. As the ailment progresses, the anæsthesia renders the sense of touch so imperfect, that both in endeavouring to walk and to use the hands the patient is compelled to direct his movements by the eye. The sense of numbness is pretty constantly present in these cases, but the formication is chiefly, perhaps only, felt when efforts are made to move the affected limbs. If the paralysis continue for any length of time, the muscles concerned become flabby and sometimes very much emaciated, and their strength becomes so much impaired that patients who can move the affected limbs freely in bed often walk with much difficulty, or are even unable to stand, their limbs bending under them in the effort, so that, unless supported, they fall to the ground. Very often this loss of power and numbness are accompanied by increased sensibility of particular parts of the affected limbs. There is tenderness of the soles of the feet, of the calves of the legs, or of the fleshy parts of the arms; besides this, general tenderness, pressure of the instep between the finger and thumb often causes acute pain, with convulsive starting of the leg and foot; and pressure along the large nerves of the arm and thigh, especially the median and sciatic nerves, is attended by pain or acute tenderness. In one case there was very considerable pain on percussion over the dorsal and lumbar vertebræ, and also tenderness on pressure by the sides of the vertebræ from the lower dorsal region downwards. In the severest cases of diphtherial paralysis and anæsthesia a sense of tightness is often experienced, as if the parts were firmly bandaged. This does not usually occur till the patient is beginning to mend, and is then often very troublesome, extending sometimes to the arms, legs, and abdomen. Other and more grave nerve affections occasionally follow diphtheria, and may prove fatal, as cardiac paralysis or persistent irritability of the stomach. Rest in bed, generous diet, and tonics, constitute the chief part of the treatment. Strychnia has proved very valuable.

WATERS, A. T. H., M.D.—*On a remarkable Case of Lesion of the Medulla Oblongata, with remarks.* Med.-Chir. Trans., vol. xlv, p. 115.

A man, æt. 23, previously in perfect health, was struck on the left side of the face by a capstan bar, and stunned, but soon recovered. The next day he walked into the hospital with the aid of a man supporting him on each side. He was then perfectly conscious, and answered questions rationally and distinctly, but his articulation was not quite perfect. He complained of slight dizziness of the head, and of a slight numbness of the right side of the face and of the right arm and leg. He was unable to swallow, and had constant hiccough; the face was dusky, the breathing quiet, and the pulse 100, and regular. The tongue was protruded straight, but the uvula deviated to the left. There was partial loss of power of the right side of the face and of the right arm and leg. Both these limbs, however, could be readily raised, but not so easily as those of the opposite side. The pupils were a little dilated, they acted irregularly, and the eyeballs were constantly oscillating. The right side of the face, the right arm, and the right leg, were sensibly of higher temperature than the same parts on the opposite side. Sensation was good on both sides. Beef tea introduced into the stomach was immediately rejected. He died

suddenly the same evening. None of the cranial bones or vertebræ were fractured. The substance of the cerebrum was perfectly healthy, and no extravasation was found anywhere; its cavities were free from fluid effusion, and the nerves arising from the base, with some exceptions, to be mentioned, were uninjured. The under surface of the right hemisphere of the cerebellum was superficially lacerated. The medulla oblongata, at its right posterior aspect and right side, was the seat of extravasation of blood, which was connected with two lacerations of the nervous structure. The upper of these was found to have divided the right restiform body about its middle, extending behind almost to the median furrow of the fourth ventricle, and in front as far as the line of origin of the eighth pair of nerves. As far as it was possible to judge, this laceration involved the whole or very nearly the whole of the fibres of the restiform body and a portion of the gray matter spread out on the floor of the fourth ventricle. None of the roots of the eighth pair of nerves were torn, but the laceration extended close to the superficial origin of the glosso-pharyngeal and par vagum, and, no doubt, involved their deep fibres. The second laceration was situated just below and to the right of the nib of the calamus scriptorius. It had divided the posterior pyramid and the tract outside it, which is the continuation of the posterior column of the spinal cord. Its depth was about one sixth of an inch; it extended from the median fissure to the line of attachment of the posterior roots. A vertical laceration passing down the inner side of the restiform body connected the two transverse. The case shows that the restiform body is not the medium for the transmission of impressions from the posterior roots to the sensorium.

PALMER, T., M.D.—*On Reflex Hemiplegia.* Lancet, Dec. 19th.

Palmer records the following case:—A. B.—, æt. 63, free from any constitutional or organic disease, toothless, but in the habit of taking meat, was suddenly seized with left-sided hemiplegia in April, 1859. This improved materially after a gr. iv dose of calomel; and after six leeches and a few doses of aperient medicine, disappeared in four days. For four years he continued well, except his annual attack of bronchitis. He had much anxiety in business. Early in 1863 he began to suffer from nervous disorders, unbearable restlessness, and oppression in the early morning, severe nervous dyspepsia, inability to attend to business—in fact, various symptoms of cerebral irritation. These were markedly relieved for a time by narcotics, but in a few days their effect was lost, and he was worse than before. A powerful cholagogue of calomel and sulphate of manganese at last brought away a large quantity of very offensive fæces, and the patient was permanently relieved. Palmer observes that the result in the second attack shows the hemiplegia of the former to have been probably reflex.

LAYCOCK, T., M.D.—*On the Cerebro-spinal Origin, and the Diagnosis of the Protrusion of the Eyeballs termed Anæmic.* Edin. Med. Jour., Feb., 1863.

Laycock dissents from the view that the symptom in question is the result of anæmia, and refers it rather to disorder of the nervous system. He distributes the cases in which it occurs into various groups:—(1) The

neuralgic and hysterical. In this group there are neuralgic affections of different degrees of intensity. Sudden spasms or pains in the precordial region may accompany the palpitation, or orbital pains may complicate the exophthalmos. Or there may be the most striking hyperæsthesia of the skin generally, and of the special senses. (2) *Paroxysmal.* The exophthalmos and bronchocele may be developed paroxysmally to a considerable extent, but subside so much in the intervals as hardly to be recognisable; or this may be the case as to the exophthalmos only. (3) *Orbital and facial.* The nervous symptoms, and especially the palpitations, may be less marked, but myopia, weakness of vision, and orbital and frontal neuralgia accompany the exophthalmos. In these cases there may or may not be bronchocele. (4) *Cardiac and cephalic.* The symptoms referable to the head and heart may be strikingly predominant, but the exophthalmos and bronchocele be little marked, especially in the earlier stages. (5) *Thyroideal and cervical.* Bronchocele, with pulsating thrills in the carotid arteries and the vessels of the thyroid, may be strikingly marked, but no urgent cardiac symptoms or exophthalmos. (6) *Complicated cases.* Complications may either precede or follow the local affections.—(a) There may be uterine disorder. (b) The anæmic condition may be associated with hæmorrhages, especially meningeal, gastric, intestinal, and uterine. (c) Rheumatism and rheumatic affections may coincide. (d) Diathetic degenerations, chiefly atheroma of the arteries involved, as the aorta and ophthalmic and thyroideal arteries, and structural diseases of the thyroid, heart, and pericardium. (e) Disease consecutive to these, especially dropsies and Bright's disease. He refers the exophthalmos to changes in the motor mechanism of the eyeball and eyelid, induced by changes in that part of the nervous system more particularly connected with the eye, and states that it may be sometimes of cranial, sometimes of spinal origin. The former is the case when the Casserian ganglion, or trunk of the fifth nerve are diseased, the latter when the upper dorsal nerves (in the dog) are irritated. When of cranial origin, the affection is usually one-sided; when spinal it is symmetrical.

LAYCOCK, T., M.D.—*On the Causes and Nature of the Vascular kind of Bronchocele, and of the Pulsations and Palpitations termed Anæmic.*
Edin. Med. Journ., July, 1863.

Laycock considers that the connection of diseases of the thyroid gland with the functional activity of the reproductive organs in women affords an important clue to the etiology of the neuro-vascular form of bronchocele. He says, "If it can be shown that the female reproductive organs influence, physiologically and pathologically, the thyroid body through the nervous system, as they influence other organs—the mammæ, for example—and if the channel by which this influence is exercised can be shown to be the cervical or 'oculo-spinal' region, all necessary proof is adduced." Many years ago Laycock referred the class of nervous and hysterical palpitations to a morbid activity of the dorsal portion of the spinal cord, and he now cites Bezold's researches as corroborating his views. "The connection of the heart with the oculo-spinal region may therefore be assumed as proved, and the violent palpitations which accompany the exophthalmos and the vascular bronchocele are seen to be part of the same cerebro-spinal neurosis."

The thrills and pulsations in the head, neck, and thyroid gland, he refers to disorder of vaso-motor centres in the spinal cord, distinct from those which influence the heart. The proximate cause of nervous and anæmic palpitations, pulsations, and thrills, is, according to Laycock, heat locally developed, in consequence of a lesion of the vaso-motor nerves, which raises the temperature both of the arterial tissues and of the blood circulating through them, and thereby excites them to that increased activity known as pulsations, throbbing, and the like. The heart is excited by the same stimulus, as Caliburceës' experiments show. The beneficial effect of cold applications to the vascular bronchocele contributes evidence confirmative of these views. On the relations of his subject to neurosis, fevers, inflammations, and anæmia, Laycock observes "that rapid eremacausis of the tissues, and the consequent production of heat, and therewith the increased vascularity which constitute the essential morbid phenomena, is obviously but an exaggeration of a natural state common to all hot-blooded animals. If it take place within the cerebro-spinal axis or in particular portions of that axis, then there result the varieties of neurosis which are said to be due to irritation, and not to inflammation, and which are predominantly characterised by exaggerations of function; if within the heart and large vessels, nervous pulsations and palpitation. But if the morbid state involve the blood itself as well as the vaso-motor system, then a very important additional element in causation is introduced; for if, on the one hand, it be certain that the varying states of that system increase or diminish the eremacausis of the tissues and the production of heat, so it is equally certain that the condition of the blood, as the nutrient fluid from whence the materials are drawn which keep up the eremacausis, will deeply influence it likewise, and therewith those conditions of the tissues themselves which are structural, according to the varying constitution of the blood. And this is what occurs in anæmia, fevers, and inflammations. If a certain kind of blood defect concur with a local vaso-motor defect, involving chiefly the heart and large vessels, the two states are the factors which constitute conjointly the cause of *anæmic* pulsations, palpitations, and thrills. Here the state of the blood may be considered as the antecedent or predisposing cause. If, however, the two conditions be general, and due to specific causes, then arise the phenomena of specific fevers; or if the general vaso-motor defect be also localized and restricted to an organ or tissue, then arise the phenomena of specific inflammations.

FLETCHER, J. O., M.D.—*On Exophthalmic Goitre*. Brit. Med. Journ., May 23rd.

Fletcher records six cases under his own care, and three under Dr. Thorburn's. He gives numerous references to previous writers on the disease, and quotes the details of several post-mortem examinations. He does not agree with any of the theories that have been already brought forward, but is inclined to think that the disease consists in hyperæmia of the brain and sympathetic; that this hyperæmia modifies the primary and secondary assimilation; that the latter interferes with the normal elimination of one of the primary animal compounds formed in secretion (cholesterine?), and thus induces spanæmia; that this spanæmic

state, acting upon the brain and cardiac nerves, causes the palpitations; and that the other symptoms arise as a consequence of this peculiar action of the heart and of spanæmia, even up to organic changes in the viscera, heart, and vessels.

PSYCHIATRIK.

CLOUSTON, T. S.—*Tuberculosis and Insanity*. Journ. of Mental Science, April, 1863.

The general results to which Clouston's investigations have led him are the following:—(1) Phthisis pulmonalis is much more frequent, as *an assigned cause of death*, among the insane than among the general population. (2) Tubercular deposition is about twice as frequent in the bodies of those dying insane as in the sane. (3) Phthisis pulmonalis is the "assigned cause of death" in only about one half of those in whom tubercular deposition is found after death. (4) The brain in the cases of tuberculosis is not so frequently diseased in a marked manner as it is in those dying of other diseases among the insane. In the majority of cases the brain is pale, anæmic, irregularly vascular, with a tendency to softening of the white substance of the fornix and its neighbourhood, and the gray matter of lower specific gravity than in any other cases of insanity. (5) Tubercle is not more frequently found in the nervous centres among the insane than among the sane, and when found it does not in all cases, or even in the majority of them, produce any symptoms, and is not connected with any particular form of insanity. (6) Tubercle of the peritoneum is not more frequent among the tubercular insane than among the same class in the sane. In the former it is more frequently associated with melancholia and monomania of suspicion than ordinary tuberculosis of the lungs. (7) The average age at death of the cases of tuberculosis is about three years below the average age at death among the insane generally, and the average age of those in whom *much* tubercular deposit is found is five years below the general average. (8) The proportion of the tubercular who had had previous attacks of insanity is about the same as among the insane generally. (9) There is hereditary predisposition in 7 per cent. more of the cases of tuberculosis than of the insane generally. (10) Monomania of suspicion is the form of insanity in which tuberculosis is most frequent, and general paralysis stands at the other end of the scale that marks the frequency of tuberculosis in the different forms of insanity; mania stands next to general paralysis, and melancholia to monomania of suspicion, while the tendency to dementia in all forms of insanity is greater among the tubercular than among the non-tubercular. A majority of the cases of general paralysis and mania die non-tubercular; a majority of the cases of melancholia, monomania, and dementia, exhibit proofs of tuberculosis after death. (11) In all the cases of general paralysis who were tubercular the disease had commenced with depression. (12) In a certain number of cases (about one fourth of all those in whom tubercle was found), the insanity is of such a peculiar fixed type that it may be called phthisical mania. In all those cases the phthisis is developed so soon after the insanity that tubercles must have already formed in the lungs, or a strong tubercular tendency been present, and about to pass into actual tuberculosis when the insanity appeared. We

know that the chief characteristic of tuberculosis is an impaired energy in the nutritive processes; and as a badly nourished bone becomes carious or necrosed for slight causes, or a badly nourished skin becomes subject to parasites, so disordered action results in those imperfectly nourished brain-cells from causes which would not be felt by a healthy brain. It is not the enfeebled nutrition directly so much as the perverted action to which the enfeebled nutrition predisposes that produces the insanity. The peculiar mental state, the incurability of the insanity, the appearance of the brain after death, and its lowered specific gravity, all point to such a cause for the derangement. (13) There is a special relation between deep melancholia, with long-continued suicidal tendencies and refusal of food, and lung disease—either gangrene or tubercular disorganization. (14) There are a few cases in which the insanity is only a kind of delirium, occurring during previously developed chronic phthisis, and soon passing off. (15) The prognosis is most unfavorable if tuberculosis occurs in any case of insanity. (16) Half the cases of tuberculosis die within three years after the commencement of the insanity. (17) There is no proof that the "morbid influence of the pneumogastric nerve" has anything to do with the tuberculosis in cases of insanity. (18) Long-continued insanity does not tend to the development of tuberculosis more than to the production of other diseases. (19) Phthisis is entirely latent in between one third and fourth of all the cases among the insane, and in almost all the others it is latent for a considerable time. This latency is most frequent in general paralysis, in which the majority of the cases of phthisis exhibit no symptoms whatever. (20) There are very few cases where the commencement of the insanity benefits the phthisis; but in a few where the phthisis is very chronic an attack of insanity may be followed by the permanent disappearance of the phthisical symptoms, or attacks of mania may alternate with symptoms of phthisis. In by far the majority of such cases, however, the phthisical symptoms are merely masked, while the deposition of tubercle goes on.

HESCHL.—Osterrh. Ztschr. f. prakt. Heilk., viii, 29, 1862. Schmidt's Jahrb., vol. 117, p. 205.

Found in the brain of a melancholic patient, æt. 26, an hæmorrhagic cavity of the size of a bean, filled with serum and traversed by degenerating vessels and connective tissue. The adjacent structure was indurated, and contained several groups of nerve-cells and fibres, partly ossified, partly in process of becoming so. The ossific deposit dissolved in H Cl without the development of gas.

MICHÉA.—*On the Derangements of the Sensations of Hunger and Thirst in the Insane, and on their influence on their Ideas and Actions.* Gaz. des Hôp., 70, 71, 1862. Schmidt's Jahrb., vol. 117, p. 206.

During stomach digestion some patients become very excited and violent who are calm in the intervals, and in whom there is no notable evidence of dyspepsia. One of them was cured by bismuth and opium. In some cases the sensations of hunger and thirst appear to be quite lost; this condition continued in one patient for eighteen months. This state is mostly met with in the melancholic, while the opposite occurs in states of psychical exaltation, in mania, idiocy, and especially in dementia

paralytica. Dipsomania is a form of this disorder. Perversion of hunger and thirst shows itself in various ways, among which may be mentioned a longing for human flesh, which has caused some lunatics to commit murder that they might gratify this longing. Iodide of potassium is said to have proved beneficial in cases of loss of appetite, opium in cases of immoderate.

KONTNY.—*On the use of Opium in Insanity.* Preuss. Ver. Ztg., N.F.V., 32, 1862. Schmidt's Jahrb., vol. 117, p. 208.

Kontny records three cases in which the continued use of opium in gradually increasing doses was of great advantage. The daily amount taken was ultimately twelve grains, the evening dose being increased much more than the morning. The treatment was continued from two to three months. Two of the patients were affected with illusions, one with acute melancholia.

DUNCAN, J. F.—*Dublin Q. J. of Med. Sc.*, Feb., 1863.

Records three cases of syphilitic affection, producing in the first epilepsy differing in no respect from the ordinary form of the disease, and succeeded, after years of suffering, by symptoms of mental derangement; in the second case epilepsy did not occur at all, but there was decided insanity; in the third, insanity took the precedence, and epilepsy followed. The form of mental derangement was different in all the cases. In all a modified mercurial treatment was advantageous, quinine being associated with the mercurial.

ERLENMEYER; FOCKE.—*On the employment of Opium in Psychiatrie.* Arch. d. Deutsch. Ges. f. Psych., iii, 1, 2; iv, 1, 1862. Schmidt's Jahrb., vol. 118, p. 78.

Erlenmeyer states that opium acts best in melancholia, especially in so-called active melancholia, a form which at first sight might be confounded with mania on account of the violent outbreaks of the patients. These are occasioned by the sense of precordial distress, which drives the sufferers about in a restless state. Opium often relieves this, but not invariably. It is necessary to take account of the age and sex of the patients. Women are more prone to suffer from gastric disorder at the commencement of the treatment than men, but they bear large doses better, and the results are more successful. Younger patients recover far more easily and quickly than older, but even this beneficial effect of youth ceases earlier in males than in females. In chronic (passive) melancholia there is not much to be expected from opium, and in pure mania it is also ineffective. In cases of insanity with fixed delusions opium will probably produce considerable improvement if the delusions are of a melancholy character; but if they are the reverse, if they are of the magnificent stamp, opium treatment gives no results. In general paralysis, idiocy, and dementia, the drug is of no avail. Focke states the following indications for the use of opium:—(1) The case should be free from any profound anatomical lesion of the brain or cranium as the cause of the disease; therefore opium is *à priori* contra-indicated in all cases where injuries of the head, tumours, meningitis, with its consequences, disease of the cerebral vessels, determine mental derangement

(2) Opium should not be administered when there is fever, plethora, cerebral congestion, considerable derangement of the circulation (as in valvular defects), or severe gastric disorder. (3) The more recent the case, the more favorable it is for opium treatment. (4) It is essential to the favorable action of opium that the psychical disturbance should preponderate over the real and illusory impressions which produce it. (5) Those cases are specially suited for opium in which the disease depends on psychical causes, &c. (6) Where there exists a natural irritable condition of the nervous system. Erlenmeyer makes the following remarks as to the action of opium on different organs. Small doses do not usually disorder the digestive system; larger ones often do, and then, if this disorder does not cease on the mode of administration being changed, the drug must be omitted. In the great majority the appetite does not fail or improves; this has been remarkably evident in cases of obstinate abstinence from food, where the patients have begun to take food voluntarily. The general nutrition improves, and the bodily weight increases, sometimes very rapidly. If the weight diminishes, a pause must be made in the treatment, or the dose not increased. If the diminution of weight continues, the drug must be omitted, as it is a sign that the system does not tolerate it. If the weight increases without simultaneous improvement of the psychical state, it indicates that the proper dose has not yet been reached. If under the same circumstances the psychical state deteriorates, the opium must either be omitted or given in combination with other means. On the respiratory organs no marked effect was produced, except that their action was performed more easily. The heart's action was often increased at the commencement of the treatment, and sometimes, especially in the anæmic, there was considerable palpitation. This was quieted by giving carbonate of iron along with opium, or, if it occurred in evident paroxysms, by combining quinine with the opium. The urine during the administration of opium was often diminished in quantity, and always became darker, of greater specific gravity, and richer in uric acid and urates. The sexual organs did not appear affected. The influence on the nervous system was the most remarkable—all neuralgic disorders yielded, hallucinations diminished, and sleep was induced. The mode of administration preferred by Focke is a modification of that pursued by Engelken, which consists in giving opium in gradually increasing doses for several weeks together. Engelken begins with from gr. i to ij, according to the general condition of the patient. If in six hours no effect is observed, the dose is doubled. If again there is no effect, the dose is again doubled in from six to twelve hours, and so on until gr. x or xij are given for a dose, when the drug is omitted, as a further increase would generally be useless. The amount and the frequency of repetition are regulated by the effects. In case of increased excitement or other suspicious symptoms, the dose is moderately increased; if the stomach is disturbed, it is diminished, or morphia is substituted. The addition of digitalis (in powder or acid infusion) to the opium seems to be of advantage by regulating the contraction of the vessels. Erlenmeyer pursues a more gradual method of administration. He gives usually gr. i, rarely gr. ij, for a daily dose (evening); and if no unfavorable symptoms occur, he adds a morning dose. These are in-

creased, one or both, every fourteen days, by gr. i, until the amount reaches 10, 12, or even 16 grains for a dose.

BERTHIER.—*On the Treatment of Chronic Diarrhœa in the Insane.* Gaz. des Hôp., 71, 1863. Schmidt's Jahrb., vol. 120, p. 347.

The disorder in question is of atonic character, and depends on defective innervation. The best treatment consists in the administration of dry roast meat, moistened with some coffee or pure wine. The hygienic arrangements must be good, and no medicines are to be given. The importance of attention to hygiene is evidenced by the comparative infrequency of the disorder in all good asylums.

CRICHTON BROWNE, J.—*On Mania Ephemera.* Med. Critic and Psycholog. J., Jan., 1863.

No differential diagnosis, the author states, is yet established between ordinary and ephemeral mania; the following particulars, however, are mentioned in which the two are dissimilar. In a large majority of cases of mania ephemera there are none of those premonitory symptoms which so generally herald the approach of ordinary mania. The sufferer may be weak, anæmic, and in bad bodily health; but until the occurrence of the exciting cause, the mind most commonly remains unclouded. So also during the paroxysm the involvement of the mind seems usually to be less deep and entire than in ordinary mania. In ephemeral mania there is generally more regard for cleanliness and decency than in mania proper, and the language also is less blasphemous and obscene. Destructive tendencies and homicidal impulses are frequent in mania ephemera, rendering it a dangerous malady, and one which may easily give rise to medico-legal problems. Many of the epidemic psychopathies which have from time to time appeared seem to have been epidemics of ephemeral mania. The treatment must be conducted on ordinary principles, the object being to calm, support, and give tone. The duration of the attack does not usually exceed forty-eight hours, and the author warns against the mistake of removing the patient to an asylum, which is quite unnecessary.

CARMICHAEL MCINTOSH, W.—*On Morbid Impulse.* Med. Critic and Psycholog. J., Jan., 1863.

There are four ways (as stated by Dr. W. A. F. Browne) in which the onset of the malady may arise. (1) It may arise suddenly, strongly, irresistibly, and precipitate the actor into a course diametrically opposed to his previous character. (2) Or a passion may be nursed and nourished until it obtain dominion over every restraining power. Tendencies in themselves hideous, long subdued by reason and religion, or disguised by prudence, are developed by the decay and deterioration of better principles, by external temptations. (4) The moral sense is warped, as the will or the imagination is, by cerebral disease. The causes of morbid impulse are in a great measure the same as those exciting any form of insanity—hereditary influence, imitative sympathy, favorable opportunities, blood disease, or visceral, cerebral injuries, coup de soleil, epilepsy, exposure to cold, abuse of alcoholic stimulants, bad education, prolonged seclusion, all may have this effect.

CONSTANS.—*Account of an Epidemic of Hysterical Demonomania.* Ann. Méd. Psychol., Oct. 1862. Med. Critic and Psycholog. J., Jan., 1863.

The inhabitants of Morzines, a small commune in Haute Savoie, live in a state of great poverty and bad hygiene. This epidemic had lasted about four years, and affected as many as 110 out of a population of 2000. Those affected were termed possessed; they were mostly celibates, chloro-anæmic, or scrofulous, and suffered from gastralgia or dysmenorrhœa. Everything gave occasion for a paroxysm, especially the expression of a doubt that they were possessed. The phenomena were partly hysterical, partly maniacal. The affected retained sufficient consciousness not to injure or expose themselves in the most disordered actions. The epidemic was arrested by removing the priest, and intimidating the people by the presence of soldiers.

MCLEOD, KENNETH, M.D.—*Hydrocyanic Acid in the Treatment of Insanity.* Med. Tim. and Gaz., March 14th, 21st.

The author has treated more than forty patients with this remedy, during a period exceeding six months, and the results have been highly satisfactory. (I) The symptom which has in every case indicated the administration of the drug is excitement, the manifested excess of cerebral activity which almost invariably accompanies or assists in constituting most forms of acute insanity, however caused or conditioned. This increase of manifested energy may consist in an excessive activity of any or all of the representative faculties—gesture, feature, voice, or an intensified action of the brain itself, resulting in a morbid rapidity of ideation. This excessive and purposeless cerebral vigour (hypernoia, as McLeod terms it) may coexist with more or less mental derangement. It may be an utter delirium, in which reason and design are totally wanting, or may exist along with incoherence and delusions of all sorts and degrees, and with one or several active propensities—erotic, destructive, dirty, homicidal, suicidal, &c. It forms the element of acuteness in many different forms of insanity, is the main object of various medicines and plans of remedial treatment—morphia, antimony, warm bath, douche, emetic, purge, &c. Its degree measures alike the gravity of the disease and the success of treatment, the *paranoia* or faculty disorganization being subsequently removed mainly by tonic, dietetic, and moral means. (II) The *effect* in every case has been very manifest. It has been almost purely psychical, consisting in a very remarkable, sudden, or gradual cessation of hypernoetic manifestations, with or without the induction of sleep. While its repeated exhibition has never failed to have some calmative effect, this has varied according to the circumstances of the case, and has occurred in all degrees, from the gradual, slight, and temporary, to the immediate, absolute, and permanent. (1) In cases of mania and melancholia of great severity and long duration, with organic disease of the brain and body, its calmative action has been more slowly produced, with more difficulty maintained, more evanescent and futile. (2) In recent cases of mania and melancholia, where no grave structural change exists, and the morbid condition has not become so stereotyped by constant repetition of similar changes, its exhibition has been followed by an immediate and sustained

change for the better. (3) In the violent paroxysmal mania of epilepsy and general paresis, in menstrual mania, and acute melancholic paroxysms, a single administration, or a few full doses at short intervals—have effectually dispelled the paroxysm. The effect is thus of two sorts—(1) Immediate: in a few minutes, one to five generally, a patient who has just been shouting, chattering, dancing, swearing, thumping, &c., becomes settled and quiet, sits upon a seat, and perhaps falls into a sound sleep. And (2) gradual: the patient becoming, as the hypernoia is thus from time to time warded off, more rational, companionable, and useful. Whilst changes in psychical manifestation are thus very obvious and striking, concomitant physical phenomena are very obscure or wanting. Only in two cases have I observed a very decided change in the character of the pulse, which became slower, weaker, and in one slightly irregular. In two other cases, in which a slight over-dose was given, a semi-comatose condition was induced, with complete adynamia, partial ptosis, the accumulation of frothy saliva, pallor, slight affection of breathing and pulse,—phenomena almost exactly resembling those immediately preceding an epileptic paroxysm. (III) The dose has varied from mij to ℥vj ; ℥v is the most convenient, and if the effect is not promptly established, a repetition every quarter of an hour effectually secures it. The effect is rather evanescent, and has been observed in some cases to disappear within an hour; but if a slight degree of hypernoia recurs, a subsequent administration is apt to have a more potent effect. The interval may vary according to the nature and exigencies of the case and the effect produced. It may be administered either by the mouth or by subcutaneous injection. For the latter the dose recommended is ℥v combined with ℥xxx of water. (IV) The advantages of the drug in comparison with other calmatives and hypnotics are—(1) The rapidity, certainty, and simplicity of its effects. (2) Its manageability and freedom from any cumulative property. (3) The absence of any disagreeable concomitant or consequent physical disturbance, which most other analogous modes of remedial treatment possess. (4) Its small bulk, want of colour, and its miscibility. (5) Its want of repulsive smell and taste. (6) Its not impairing appetite and digestion, but rather improving both. Besides its great value as a simple quieter in cases of mania and melancholia and in maniacal and melancholic paroxysms it renders still more important service. McLeod has no doubt, from his experience, that it has the power promptly of staying cases running on to chronic insanity on the one hand or exhaustion and death on the other, and of obtaining simply and satisfactorily results which are at present aimed and arrived at by boiling a patient in hot baths, half drowning him in douches, narcotizing with opium or morphia, nauseating with tartar emetic, exhausting with purging, roasting with blister, or debilitating with lancet, leech, or cup.

ROBERTSON, C. L., M.B.—*Remarks on the use of Digitalis in the Treatment of Insanity* Brit. Med. Journ., Oct. 3rd.

In cases of general paresis, during the second stage, that of mental alienation, with symptoms of maniacal excitement, Robertson's experience leads him to regard digitalis, in 5ss doses of the tincture, two or three times a day or oftener, as quite specific. It calms the excitement and enables

the patient to pass without wear or irritation through this stage of the malady. Its action has been to steady the pulse, and thus apparently to supply the brain better with blood, and so to obviate the tendency then existing to effusion of serum, consequent on the inflammatory process going on, as we believe, in this stage of the disease in the arachnoid and pia mater.

MARCÉ, L. V.—*On Senile Dementia, and the differences between it and General Paralysis.* L'Union Méd., May 28th, 1863. Brit. and For. Med.-Chir. Rev., July, 1863.

Marcé, from his experience at the Bicêtre, concludes that—(1) Senile dementia does not constitute a distinct morbid entity. It is in reality an aggregate of symptoms pertaining to different organic affections of the brain, and notably to apoplexy and softening. (2) It is made up of two series of symptoms—those on the one hand of motility, which becomes more or less affected; those on the other hand of intelligence, chiefly a progressive enfeeblement, to which is superadded maniacal or melancholic delirium. (3) The disturbances of motility are always explained by organic lesions in the course or at the origin of the motor fibres. To enfeeblement of intelligence there correspond atrophy of the convolutions, fatty infiltration, and more or less complete obliteration of the capillaries of the cortical layer, and atheromatous degeneration of the cells of the nerve-tubes. (4) Senile dementia may be distinguished from general paralysis in most cases by the signs above alluded to. In an anatomico-pathological point of view, these two diseases have atrophy and fatty degeneration of the tubes and cells as a common terminal result. But in general paralysis this atrophy is consecutive to a plastic exudation, which, arising around the wall of the capillaries, gives rise to adhesions between the pia mater and the cortical layer, diminishes the calibre of the vessel which it compresses, and obstructs the circulation of the blood. In senile dementia, on the contrary, the obliteration is consecutive to atheromatous deposits, which arise spontaneously in the capillaries, in consequence of advance of age and diminution of assimilative force.

FLINZER.—*On Insane Colonies.* Schmidt's Jahrb., vol. 120, p. 230.

After citing a great number of authorities who have expressed their opinion respecting the institutions at Gheel and similar institutions, he states that all who have given their attention to the subject agree that Gheel, in spite of its many imperfections and deficiencies, shows how a large number of insane patients can be taken care of without isolating them or shutting them up in asylums; that many patients bear a greater amount of liberty than is usually believed, and that a family life is quite pleasant to them, and agrees well with them. It is, however, extremely important that the cases sent to such institutions should be properly selected, only the comparatively tranquil and more chronic cases being suitable to be placed there. The circumstances at Gheel are so peculiar from its antiquity, the long habitation of its population with the care of the insane, and its religious traditions, that it is scarce possible to think of reproducing it exactly elsewhere. The most practical idea seems to be to have a colony, more or less resembling Gheel, attached to an asylum, from which proper cases could be at various times transferred, and to which any could return, who were found unfit for extra-asylum life.

Report on the Occurrence of Aural Hæmatomata in the Insane. Schmidt's Jahrb., vol. 117, p. 77.

Twelve cases are recorded, and the question of the mode of origin of these formations is then taken up. Some regard it as merely traumatic, others believe it to depend only on some internal dyscrasia. The latter state that they occur especially in paralytic idiots and in the chronic forms of mania and melancholia. When they are observed in other more acute forms of mania they indicate a transition into a more chronic condition. Jung, however, does not think that they make the prognosis necessarily bad, and affirms that cures are not infrequent in patients who have had them. Sometimes even they seem to have a critical character. In paralytics they especially appear when the cerebral disease, by impairing the innervation, has made the circulation weak and irregular, and occasioned œdema, ecchymosis, and local gangrene. Hæmatomata are much more frequent in men than in women. They occur in docile patients and in those who after recovery make no complaint of having been ill-treated by their attendants. They affect most often the upper and outer parts of the cartilage, most rarely the helix; sometimes they seem to move gradually from above downwards. Jung thinks that hæmatomata may originate in two ways, either by active congestion, or by passive hæmorrhage. The first form causes less change than the other, and appears to depend on paralysis of vaso-motor nerves and loss of resisting power in the walls of the vessels. It is most frequent in exacerbations of chronic forms of insanity, without any suspicion of paralysis. The second variety of hæmatoma results from general disorder of nutrition, dyscrasia of the blood and nutrient fluids, and is similar to hæmatomata of the dura mater. By those who maintain the traumatic origin of the disorder it is objected that it is extremely rare whenever the patients are well looked after and taken care off, so that in the Vienna asylum, containing 700 lunatics, no instance has occurred during six years. They also remark that no prodromata are observed, nor any gradual development and decline of the disorder; and further, that it mostly occurs in patients who are refractory and obstinately resist the administration of food and necessary attention. As regards the pathological anatomy, it seems generally agreed now that the effusion of blood is not under the skin, but under the perichondrium, and that it is the shrinking up of this membrane and the formation of fresh cartilage in layers or nodules on its inner surface which give rise to the thickening of the ear. The hæmatoma is described as a larger or smaller tumour, tense, usually fluctuating, hemispherical, circumscribed, the skin over which is normal, of a bluish-red tint. It appears suddenly, remains a long time stationary, and disappears after some months, leaving the ear variously deformed. Some recommend early incisions and pressure, others prefer leaving it quite alone.

MUSCULAR SYSTEM.

ZURADELLI, CRIS.—*On the different kinds of Contractions of the Muscles of the Arm, especially of that simultaneously affecting the Biceps and Supinator Longus.* Gaz. Lomb., 4, 6, 7, 8, 1861. Schmidt's Jahrb., vol. 117, p. 166.

The disease is rarely idiopathic, mostly symptomatic; more frequent

where rheumatism is endemic, and as the result of gout, and in the right arm. It usually commences so gradually that the contraction is not observed until it has become very marked. The principal symptoms are pain, weariness, and sense of weight of the limb; atrophy of the whole arm progressing rapidly; permanent flexion and inextensibility of the forearm on the arm; a tense state of the biceps, supinator longus, and coraco-brachialis; permanent supination of the forearm; weakening of the arm in proportion to the degree of contraction, and impairment of its movements, those of the hand remaining free. The contraction sometimes affects only a part of the above-mentioned muscles, as, *e.g.*, one head of the biceps, or only one of the three. As predisposing causes, Zuradelli mentions the male sex, the earlier period of life, and hereditary tendency to rheumatism and gout. As exciting causes, pressure of various kind on the axillary nerves, violent shocks to the arms, dislocations, fractures with shortening, over exertion of the arm, exposure to cold and wet, and the endermic application of strychnia. The form of the disease may be tonic, clonic, or mixed. The clonic causes less pain, is not uncommon in the commencement of chorea, is often followed by paralysis, and belongs more to the period of youth and childhood. A peculiar form, distinguished by fibrillary contractions, is almost always dependent on spinal cord disease. The diagnosis from contraction occasioned by apoplexy and softening is determined chiefly by the antecedents, and concomitant symptoms in other parts. In paralysis of the radial nerve the loss of power is more extensive. Injury to or suppuration of the muscles, leaves its own traces. Disease of the cervical vertebræ, causing contraction of the brachial muscles, will be recognised by its local effects. The principal complications are neuralgia, hyperæsthesia, and muscular rheumatism, loss of muscular consciousness, gout with stiffening exudation, and cerebral congestion. Idiopathic contraction seldom lasts less than three months; symptomatic is longer or shorter, according to its causes. The prognosis is not very hopeful, especially when organic changes have occurred, in very young persons, and after the disease has lasted a long time. In rheumatic and nervous contractions there is more prospect of recovery. The following definitions are given of the different kinds of contraction:—(1) *Cerebral*, produced by any brain disease, affecting the flexors, or individual parts of them; rarely permanent at first, disappearing without evident cause, and showing, sooner or later, signs of cerebral congestion, which terminates in apoplexy. (2) *Spinal*, usually the most extensive, affecting flexors and extensors, almost never limited to one limb, at least for any length of time, conjoined with grave symptoms, as loss of sensibility and easily detected by the presence of manifest disease in the cervical part of the cord. (3) *Reflected*, accompanying severe neuralgia, of short duration, and either entirely vanishing or passing into other pathological conditions. (4) *Rheumatic*, which follow muscular rheumatism, accompanying gout, or are produced by rheumatism of the brachial nerves themselves. (5) *Nervous*, occurring in irritable individuals, and from various toxic agents. (6) *Muscular*, depending on direct lesion of the muscles, over-exertion, &c. The object of treatment is, on the one hand, to relax the contracted, and on the other, to stimulate the paretic (antagonist) muscles. General baths are found to relax the contracted muscles, and though the effect is not permanent, yet

something is gained by each bath, and the electric contractility of the muscles is increased. The baths are most desirable when a notable amount of atrophy exists. Compression or division of the external cutaneous nerve sometimes produces permanent paralysis of the muscles supplied by it; sometimes only removes the contraction for a time. Gentle traction and elongation of the contracted muscles by suitable apparatus is useful, and so also is exercise of the antagonists. In cases of paralysis of the antagonists, strychnine, if borne well for twenty days, is very likely to be speedily successful. Mineral mud applied to the affected limb is beneficial in cases of organic attenuation from gout or other causes. Paralysis of the antagonist muscles and of the skin is recommended; the latter has a magical effect in recent cases. In acute cases of rheumatic character general and local bleeding, followed by quinine and narcotics, do good service.

BRENNER.—Petersb. Med. Zeitschr., iv, p. 197, 1863.

Advises the use of the constant galvanic current to very atrophied muscles before the induced, which otherwise may prove injurious by stimulating the weak muscular fibres beyond their powers. He thinks that the constant current improves the nutrition of remaining muscular fibres, and causes the formation of new ones.

MALMSTEN.—*On Progressive Muscular Atrophy*. Hygiea, vol. xxiii, p. 555. Schmidt's Jahrb., vol. 117, p. 31.

Malmsten has observed three cases, one of which ended fatally. At the autopsy no change was found in the anterior roots of the spinal nerves. Malmsten regards the disease as a primary muscular affection—
 (1) Because, of the muscles which derive their nerves from the same trunk, one is often seriously involved, while the others appear quite healthy.
 (2) Because in palsies depending on affections of the nerves the muscle, though its function is lost, remains for some time unchanged in structure, which is not the case in progressive muscular atrophy. Malmsten is disposed to adopt Oppolzer's view, that the disease consists essentially in a chronic parenchymatous inflammation of the muscles, the exudation taking place into the fibres leading to their degeneration and decay.

TAYLOR, F.—Med. Times and Gaz., July 11th.

Records a case of paralysie musculaire atrophique successfully treated, after other means had failed, by Pot. Iod. in doses of gr. v ter die. The patient was a strong, healthy looking man, who had scarcely known a day's illness. In seven days the paralysis, which commenced in the feet, had extended upwards, and involved all the limbs, and even to some extent the facial muscles, which were agitated with a kind of fibrillary quivering or tremor. This tremor was not apparent in the muscles of the limbs. Great muscular atrophy ensued in both the upper and lower extremities; the power of articulation, deglutition, and respiration, was perfect, sensation being developed to its highest degree. The sphincters remained quite efficient. After the disease had continued seven weeks the iodide was commenced, and in about two months he had completely recovered.

TOMMASI.—L'Union, 114, 1862.

Records a case of progressive paralysis of the tongue, palate, and lips, occurring in a man *æt.* 48. It had existed eight months when the patient came under treatment. At the end of three weeks, by daily Faradization, the power of voluntary motion was restored, though the voice had still a nasal twang, and the letter *r* was pronounced imperfectly. Two months later the improvement was still maintained.

CIRCULATORY SYSTEM.

MAREY; MACH, E.; DUCHEK, A.; BETZ, F.—*On the Pulse*. Schmidt's Jahrb., vol. 117, p. 87.

Marey's instrument (*v.* 'J. de la Physiol.,' April, 1860) is said to be much simpler and more convenient than Vierordt's. The varying amount of vascular tension seems to be the chief cause of the varying curves which the instrument describes under different circumstances. The frequency of the pulse M. believes to depend (1) on the influences which affect the heart through the nervous system; (2) on the amount of resistance offered to the heart's contraction, which is in a direct ratio to the arterial tension. Duchek ('Wien. Ztschr.,' xviii, 1862) approves of Marey's sphygmograph, and describes the results of his observations with it. He contends that dirotism of the pulse is in no way dependent on the heart or the great vessels, but upon each individual vessel, according to the laws which regulate the motion of waves in elastic tubes.

MYRTLE, A. S., M.D.—Lancet, May 30th.

Records a case of anæmic sphacelus, as he terms it. A military man, strongly built and of sanguine temperament, *æt.* 46, healthy looking, and having enjoyed uniform good health in spite of seven years' active service in the tropics and in the Crimea, complained of the following affection. The fingers of both hands, especially those of the right, are pale and cold; the right little finger, from its point to its middle, feels cold as ice, and its ungual phalanx is blue—looks as if dead; under the tops of each nail, and extending across, there is a purple line about one tenth of an inch in breadth. The thumbs and the rest of both hands are natural. The last phalanx only of the right little finger is devoid of sensation. The ears are much colder than natural, have a mottled appearance, and exhibit on the outer and posterior part of each helix a number of ecchymosed patches. Heart's action normal, but weak. Five days later he passed a sleepless night, having been kept awake by severe and constant burning pain in the feet and toes; the feet were pale, cold, and clammy, the extremities of the toes being bluish, and tender to the touch; the fingers, except the little one, were well, and the ears nearly so. The extremity of the right little finger became gangrenous, and was removed by Mr. Walter Coulson, who was satisfied by careful examination that there was no disease in the arteries. Myrtle is of the same opinion, and thinks that all the symptoms arise from—(1) feeble action of the heart, and (2) lowering of the vitality from deficiency of nerve force. Citrate of iron and quinine seems to have been most beneficial as a remedy.

HABERSHON, S. O., M.D.—*On Idiopathic Anæmia*. Lancet, May 9th, 16th.

Habershon enumerates the causes of anæmia as—(1) Those which interfere with the proper re-formation or the renewal of the blood, as diseased glands, mesenteric or lymphatic, &c. (2) Causes operating directly on the blood itself, as the effect of physical agents, mercury, water, alkalies; so also the actual loss of blood in the different forms of hæmorrhage; here also we may mention albuminuria, and perhaps ague poison. (3) Excessive waste, the demand upon the nutritive power of the system being greater than the compensative supply; thus, although the blood may be re-formed properly, that renewal is not sufficient to compensate for the constant loss which takes place from exhaustive discharges. He poses the question whether some forms of anæmia may not be correctly attributed to diminished power in the sympathetic centres rather than to the organs which they influence. A case is related, ending fatally, where the symptoms were frequent vomiting, occurring sooner or later after food; aching post-sternal pain, increased by food and vomiting; a burning sensation in the shoulders and back, pallor and emaciation. While taking strychnia gr. $\frac{1}{12}$, she was attacked with very severe pain, and such sudden extreme prostration that it seemed as if perforation had taken place. With small doses of morphia she improved very much, and became able to take animal food with appetite. About nine months after her discharge she returned to the hospital, blanched, emaciated, and extremely feeble. No pain was now felt after food; there was no vomiting, and no evidence of disease of the stomach. The urine was normal, and the blood-globules appeared healthy under the microscope. She was, however, unable to take food, even nutrient enemata could not be borne, and she gradually sank and died. Except some fatty degeneration of the heart, there was no morbid change. She had resided in a damp, unhealthy locality, and had been scantily supplied with the necessaries of life. Habershon does not find that pepsine is of service in these cases; small doses of nux vomica or strychnia are apt to cause faintness; but quinine and iron given in pills, with a little aloes and henbane, often agree exceedingly well. In the worst cases no treatment avails, the stomach becomes apparently incapable of tolerating the presence of food, even when the patient can be persuaded to swallow it; and in proportion as the nervous exhaustion increases, the morbid state of the stomach is also aggravated; the one reacts upon the other, each increasing the other's defect.

GÉLINEAU.—*Epidemic Angina Pectoris*. Gaz. des Hôpit., 114, 117, 120, 1862.

The "Embascade" corvette, with a crew of 250 men, during several years was rapidly passing and repassing between the cold latitudes of Chili or California and the hot climate of Mexico and central America. These sudden changes of temperature, together with the careless mode of life of the men and other injurious external influences, had previously induced attacks of neuralgia, scurvy, and colic. After some days of stormy weather, in the neighbourhood of St. Helena, angina pectoris appeared. Most of the persons attacked were anæmic and scorbutic. The pain always began at the sternum, and was more violent in proportion as

it approached nearer to the heart, which it always reached. It was attended with a sensation of imminent death. The pulse was for the most part slow and small; in many cases, however, the heart palpitated with extraordinary violence, and its impulse was forcible. During the attacks the patients were unable to speak, and after it was over they spoke in a low voice and in single syllables. Eructation occurred in eight patients after the attack, and gave relief; in three or four, towards the close of the attack, there were nausea and vomiting. Treatment consisted in cupping, the local application of anæsthetics, and the administration of narcotics.

GRANDIDIER.—*Report on Hæmophily, continued from the last in 1854.*
Schmidt's Jahrb., vol. 117, p. 329.

The disease appears to be gradually, though slowly, on the increase. In 1820 there were known to exist only 11 bleeding families, in 1839 there were 46, in 1849 100, in 1854 152. The number now is 174, and that of hæmophilic individuals has increased from 452 to 512. As to geographic distribution, it appears that of all known cases 48 per cent. belong to Germany, 18 per cent. to Great Britain, 9 per cent. to Switzerland and North America, and 8.5 per cent. to France. The most northerly limit of the disease is 61° N., at Christiania; the most southerly at Palembang, in the East Indies. It has been met with at an elevation of 5000 feet, at Tenna a hamlet of the Rhætian Alps, as well as in the plains of Holland and North Germany. In 256 cases of spontaneous hæmorrhage epistaxis occurred 122 times, in 11 there was hæmatemesis; in 33 the intestines, in 34 the oral cavity, in 13 the urethra, in 15 the lungs were the seat. Four times hæmorrhage took place from the tips of the fingers, 4 times from a swollen part of the scalp, 3 times from the tongue, 3 times from the ear, once from the eyelid, and 10 times from the female genitals. It has often been observed that the hæmorrhagic tendency has shown itself in a much more marked manner after the first artificial bleeding; so much so, that the disease has appeared to date from that time. On more extensive inquiry, however, it seems that the kind of bloodletting has much to do with the result. Venesection and cupping do not seem to be anything like so dangerous as leeching and tooth-drawing. One child of three months old is reported by Dr. Henschel, in New York, to have died from bleeding which took place from the scratch made in vaccination. Vieli states that in the subjects of this tendency wounds appear at first to heal favorably; it is not until about the eighth day that the wounded part swells and becomes so painful that syncope and convulsions ensue not unfrequently. A vesicle then forms, which bursts and bleeds, whereupon those symptoms remit, but recur if an attempt is made to arrest the hæmorrhage. If this succeeds, the tumour, which is of spongy character, dries up, falls off, and leaves a simple ulcer. The loss of blood is often very considerable, but Vieli and others assert that, as a rule, these hæmophilic patients bear the largest losses without injury. Slight contusions have often given rise in such persons to enormous effusions of blood, either under the skin, between the muscles, or in the visceral cavities. In some there seems to be an unusual tendency to rheumatoid pains and articular swellings. Occasionally the hæmorrhagic tendency ceases, or is replaced by some other disease. Asthma, gout, and white swelling, are

those which are especially mentioned. In the great majority of cases, however, death ensues from external or internal bleeding and anemia, and life is seldom prolonged beyond the twentieth year. Out of 153 males, 19 only survived this period. As to the quality of the blood in the hæmophilic, repeated observation has shown that the blood at first shows no deficiency in fibrine, but coagulates well, and that it is not until a later period that its solids diminish and it becomes hydræmic. The same is the case with the red corpuscles, though, after a long continuance of the bleeding, both are relatively diminished. The morbid anatomy of this disorder has hitherto taught us very little of its nature. The only morbid condition which seems to have been frequently observed is a thinness of the arterial coats, a kind of atrophy. This, however, only applies to the largervessels. In a fatal case described by Virchow the minute arteries and capillaries, as well as the nerves, presented nothing abnormal on microscopic examination. V. Bärensprung states the same of a case of fatal gastric hæmorrhage. Recent inquiries show that there are but 1 female to 11 male hæmophilic. Grandidier, however, affirms that the disease is not uncommon in the female sex, only that it is partially and incompletely developed. Though the disease occurs at the earliest periods of life, it seems that spontaneous hæmorrhage from the umbilical cord is but seldom owing to this cause, as in 202 cases of this kind there were only 14 hæmophilics. Seven Jewish children of hæmorrhagic tendency had no hæmorrhage on separation of the umbilical cord, but considerable on the performance of circumcision. The period of the first dentition is that when the tendency most often makes its first appearance, but it has been delayed as late as the twenty-second year. The hæmophilic have for the most part a soft, white, translucent skin, with manifestly developed veins, light hair, and blue eyes; black hair and dark eyes are much more rare. There is nothing remarkable in the secretions. Both town and country residents, both rich and poor, are liable to the hæmorrhagic tendency, and it appears that an abundant diet, consisting mostly of nitrogenous articles, affords no immunity. Hæmophilic parents appear to be uncommonly fruitful, 21 families producing together 204 children, which gives about 9½ children to each family. As to the origin and propagation of hæmophilia, it appears that among 98 families the disease appeared for the first time in 46 with the patient whose history is given, while in 52 hereditary transmission from parents, grand-parents, or their sisters, was made out. Among the congenital cases the parents or grand-parents were quite healthy 20 times, while in 26 they suffered from other diseases, as gout, scrofula, syphilis, pulmonary or cardiac affections. It seems that the female has much more to do with the origin of the disease than the male parent, inasmuch as in cases where the father has been married several times one wife has produced healthy and the other hæmophilic children. It also appears that violent mental emotions during lactation have not only caused the child suckled at that time to become hæmophilic, but the future progeny also. Grandidier has no complete theory of the disease to offer, but thinks that disordered innervation of the vessels and altered tone of the capillaries play an important part, giving rise to congestion and stasis, and probably also to local active determinations of blood. Increased action of the heart, which frequently occurs, he explains by the increased

amount of red globules in the blood. As to diagnosis, the only diseases with which hæmophilia can well be confounded are scurvy and purpura. The distinction rests chiefly on these points—that the latter affections are never congenital or inherited; that they occur as epi- or en-demics; that hæmorrhage in them is never so violent, obstinate, or frequent as in hæmophilia; and that traumatic lesions do not give rise to such profuse and exhausting loss of blood. Further, in scurvy there is a much greater tendency to decomposition of all the secretions, to formation of ulcers, destruction of the gums, and to sero-sanguineous exudations in the serous cavities. As to prognosis, Grandidier states—(1) That when one parent only is affected, the progeny is much more likely to suffer when the mother is hæmophilic than when the father is. (2) When one parent belongs to an hæmophilic family, without actually inheriting the disorder, there is a great difference whether this is the male or female. If the former, there is no reason to apprehend that his children, by a healthy wife, will suffer from the affection. In the latter case there is much probability that some of their offspring will be hæmophilic, the mother appearing to act as a “conductor” of the disease, though she herself escapes. (3) If both parents come of bleeding families, or are themselves bleeders, the probability that their offspring will be so is, of course, much increased; and Grandidier expresses the opinion that such unions should be legally interdicted. As to treatment, it is evident that the means employed must be different during the time of the hæmorrhages and in their intervals. In the latter, the aim of the practitioner should generally be to lower the abnormally increased action of the heart, and to diminish the tendency of the system to local orgasm and active determination of blood. In former times V.S. was employed for this purpose, but it is now laid aside as too dangerous in these subjects. Digitalis, nauseating drugs, and cooling neutral salts, are found more suitable. Of the latter, sulphate of soda is stated to have a well-established reputation, and to be looked upon almost as a specific. It is, of course, not to be administered when the crisis of the blood is seriously altered, and exhaustion is imminent. Another indication is to raise and strengthen the resisting power and the energy of the capillaries. For this purpose acetate of lead, preparations of iron, and ergotin, are recommended. They are not, however, to be used in the period of congestion and vascular excitement, but later. Some cures are recorded by means of chalybeate waters (Schwalbach and Pyrmont). When hæmorrhages actually occur, styptics must be employed; yet even in this case one must not be too hasty to arrest spontaneous bleeding by local repressants, so long as there appears no sign of danger, for fear that other hæmorrhages, such as internal, should ensue, or convulsive and apoplectic attacks. One must rather endeavour to calm the vascular excitement and to lessen the tendency to local determination by suitable general treatment. Of the various local means employed for the arrest of hæmorrhage, pressure, following a slight application of nitrate of silver, seems to be most successful, in parts where it can be borne. Perchloride of iron has often been used, but without any remarkable advantage. Mercury, in any way of administration, is to be shunned; it seems to be specially injurious to the hæmophilic, and its use in several cases has been followed by external and internal hæmorrhage. Lastly, as to the dis-

inction between spontaneous hæmorrhages from the umbilical cord in newly born children and hæmophilia, the following points have been ascertained.—(1) These hæmorrhages are rare in hæmophilic children. (2) In these hæmorrhages the *causa mali* appears to consist in a disordered crisis of the blood, whereas in hæmophilia the tone of the vessels is more at fault. (3) These hæmorrhages are characterised by the frequent occurrence of jaundice and organic disease of the liver. (4) Hereditary transmission is of rare occurrence in the umbilical hæmorrhages, whereas it is common in the hæmophilic. In the latter affection, also, the mothers are commonly free, and only act as conductors of the tendency, but in the former they exhibit manifestations of disease of the blood. (5) The females are much oftener affected in umbilical hæmorrhage than in hæmophilia. (6) No subsequent tendency to hæmorrhage is noticed in those who recover from the umbilical.

STARK.—*On Cardiac Cyanosis*. Schmidt's Jahrb., vol. 119, p. 177.

Out of 46 recorded cases which he examined, he found that in 37 there were 22 males and 15 females. The most frequent anomaly was contraction of the pulmonary artery (13 out of 42); the rarest, fusion of the aorta and pulmonary artery (1 case). Patients in whom only the foramen ovale was open reached the most advanced age. Contraction and obliteration of the pulmonary artery is not so dangerous to life, according to Stark's figures, as was previously supposed. The greatest proportion ($\frac{1}{3}$) of the cases died before the end of the third year, one tenth between the ages of 3 and 14, and one sixth between those of 11 and 18. Two cases afforded evidence that the power of procreation existed. The temperature was not always lowered, in 4 it was normal. Phthisis pulmonalis was a frequent complication; it was present in 7 out of 42 cases.

STARK, TH.—Arch. der Heilk., iv, p. 47, 1863. Schmidt's Jahrb., vol. 120, p. 45.

Reports four cases of chlorosis in which there was evident dilatation of the heart, which again disappeared as recovery took place under the use of iron.

WALES, PH., M.D.—Amer. Jour. of Med. Sc., July, 1863.

Records the case of a man dying with arachnitis and cerebritis, in whom there was found a very large circumscribed aneurism of the walls of the left ventricle. It almost appeared as if the heart was double. The aneurismal pouch had a capacity of four ounces, and was enclosed in a hard calcareous case, except at its orifice and apex.

LUITHLER, W.—*Insufficiency of the Mitral Valve, without Organic Change*. Wurt. Corr. Bl., xxxii, 20, 1862. Schmidt's Jahrb., vol. 117, p. 40.

Luithler records a case just like one of Bristowe's (see 'Year-book,' 1862, p. 183), in which there was general dilatation of the heart, undue length of the cordæ tendinæ, and, as trials on the dead body showed, insufficiency of the valve, which, however, had undergone no morbid change. Luithler believes that in cases of this kind there must be not only general dilatation of the heart, but especially of the ventricle concerned, with thinning of its walls.

BEGBIE, J. WARBURTON, M.D.—*On the Diagnostic Value of an Accentuated Cardiac Second Sound.* Edin. Med. Journ., June.

The author finds, as the result of careful observation, that, excluding the accentuated pulmonary second sound and the intensified aortic second sound in some cases of hypertrophy and dilatation of the left ventricle, the accentuated second sound in the aorta is an indication of aortic aneurism or of dilatation of the aorta associated with atheromatous degeneration. If it be the former, the aneurism probably does not arise within the pericardium, and probably does not affect the ascending portion of the arch, but has most likely its seat in the transverse portion. To distinguish between the two—in other words, to know when the accentuated second sound is due to aneurism and when to dilatation of the aorta—is not always easy. Reliance is chiefly to be placed on the associated physical signs in the former case, more particularly prominence, pulsation, extended percussion dulness, and the signs of internal pressure. If atheromatous dilatation exist, and that is the special condition, independent of aneurism, which gives rise to the accentuated second sound, there will probably be more or less pulsation in the jugular fossa, atheromatous condition of superficial pulses (radials, temporal arteries, &c.) noticeable, and probably the arcus senilis. The following points appear to be of importance in endeavouring to explain the mechanism of an accentuated second sound, under the circumstances now considered. (1) The condition of the vessel, both in cases of aneurism and of dilatation with atheromatous degeneration, being such as greatly to diminish, if not to destroy, the support given to the circulation by the artery, these results are increased recoil of blood on the closing or closed valves. (2) It is possible that a morbid condition of the valvular apparatus itself heightens or intensifies the sound. The valves are not incompetent, but in such cases they are sometimes found thickened, and even presenting a hard surface at parts. (3) Something may be due to the increased calibre of the vessel, in connection with the altered condition of its internal tunic, in causing the peculiarity of sound.

KAULICH.—*On Diseases of the Organs of Circulation, as observed at Prague, in Prof. Jaksch's Clinic.* Prag. Vjhrschr., lxxiii, 1862. Schmidt's Jahrb., vol. 117, p. 291.

Kaulich states, as regards endocarditis, that the diagnosis was founded more on consecutive clinical phenomena than on the presence of any murmur. He considers that everything is to be regarded as a murmur, which is usually designated as an indefinite, extended, or diffused sound, though it may by no means justify the assumption that the valves are incompetent. When there exists mitral insufficiency, the phenomena of which may in general be considered as those of obstruction, besides the breadth of the cardiac dulness, it is especially important to determine the existence of dilatation of the right auricle. This is indicated by an empty percussion sound, situated at the left border of the sternum, at the level of the third or second rib, over an extent of about an inch. Sometimes, also, in the second left intercostal space, there is a pulsation not quite synchronous with the heart's impulse, belonging to the commencement of the dilated pulmonary artery. During and im-

mediately after expiration in this situation, the systolic elevation is followed by a short, limited, diastolic vibration. In one case of hypertrophy of the right heart, with mitral stenosis, the author observed, while the cardiac impulse was indistinct, a manifest elevation and vibration of the sternum (produced by the right ventricle) at the attachment of the fifth rib, and a simultaneous descent of the hard, distinctly perceptible liver at each contraction of the organ. At the autopsy the right ventricle was found to be actually placed in this way, and there was a deep impression on the surface of the liver.

SKODA.—*On Reduplication of the Pulse, and Sounds of the Heart.*

Allg. Wien. Med. Ztg., viii, 3, 4, 1863. Schmidt's Jahrb., vol. 118, p. 28.

Reduplication of the pulse is probably a local phenomenon, depending upon a relaxation of the tissues round the artery, which thus becomes more movable. Reduplication of the cardiac sound depends on want of synchronism in the action of the two sides of the heart, or, rarely, on the right ventricle contracting twice for each contraction of the left. The second sound may be reduplicated without the first, but not *vice versa*. The reduplication of the second sound depends, in most cases, on a considerable increase in the tension of the pulmonary artery; as a rule, the separation of the two sounds is so brief that it amounts to no more than a dividing. Manifest reduplication of the second sound may be produced by the part of the sound produced in the arteries and that produced in the ventricle not coinciding. Sticky exudation in the pericardium may also produce reduplication of the second sound, and also certain conditions of the stomach.

DUCHEK.—*Clinical Lectures on Diseases of the Heart.* Allg. Wien.

Med. Ztg., vii, 1862. Schmidt's Jahrb., vol. 118, p. 29.

Duchek distinguishes—(1) A productive form of pericarditis, in which there is much connective tissue formed, and which usually leads to adhesion. (2) An exudative form, with copious serous effusion, often mixed with blood. (3) A suppurative form. (4) A degenerative form, where the exudation is converted into a cheesy material. (5) A destructive form, where the effused fluid is sanious, and in which gaseous products are sometimes developed, almost exclusively of secondary character. The productive form occurs in individuals previously healthy. The exudative form is to be recognised by the signs of copious effusion. Its subjects are usually depressed or dropsical. The effusion is bloody in cases of variola, scurvy, purpura, &c. If the dull percussion sound changes into a tympanitic, it indicates that gas has become developed in the pericardium. The signs of pericardial adhesion are stated as—(1) The cardiac dulness is unaltered by the respiratory movements. (2) The normal systolic impulse is quite lost, or felt only as a weak vibration. The surface of one or more intercostal spaces is drawn in at each systole. This symptom, however, is not pathognomonic of pericardiac adhesion; it may be produced in atrophy of the lungs, in pleuritic adhesion and retraction, in hypertrophy of the heart, and even in healthy, but lean persons. Retraction of the epigastrium is observed in cases where the diaphragm is

depressed, or the heart is placed vertically or horizontally, without any pericardial adhesion.

LANCEREAUX.—*On Ulcerous Endocarditis.* Gaz. de Paris, 42, 43, 45, 1862. Schmidt's Jahrb., vol. 118, p. 31.

In a male patient, æt. 44, dying with pneumonia, the mitral valve was found thickened and lengthened, covered with granular fibrine, on the removal of which a tumour as large as a pea came into view, which contained a yellowish fluid. Glomeruli and pus-corpuscles were found in this fluid. There were, besides, two excavations on the valve of the same size. The aorta, its valves, and the right heart, were healthy. There was a firm yellow plug in one large division of the splenic artery, and a patch of softening of the size of a hen's egg in the spleen. The right lung was in a state of lobular pneumonia, with œdema and pleural effusion. Lancereaux remarks that the valvular suppuration had given rise to the pyæmia. In a second case, where the left side of the heart was hypertrophied, the mitral valves were thickened, and the aortic covered with thick vegetations. From these altered valves, on section, there issued a thickish yellow fluid, consisting of pus and blood. Both lungs were completely œdematous. The patient had had attacks resembling those of intermittent fever for about twelve days, and had actually had intermittent for three months, seven years previously. In a third case the patient had been ill several days, with a sense of distress and pain in the epigastrium; a severe rigor ensued, followed by vomiting and diarrhœa. During the last two days of life there was icterus, with stupor and adynamia. The lungs were œdematous and carnified, the hepatic cells were more or less destroyed, and several branches of the hepatic artery plugged up. Spleen enlarged and rotten, a branch of its artery corresponding to a firm infarctum blocked up. The kidneys also were in a similar state. The mitral valve was elongated and thickened, yellow coloured, and much injected, and presented a patch of ulceration as large as the tip of a finger, and a small abscess. In the blood of the femoral and certain other arteries were found various granules, corpuscles, and fragments of connective tissue similar to those contained in the abscess. Lancereaux remarks on the not unfrequent occurrence of ulcerous endocarditis in pregnant and lying-in women, and states that the pyæmic disease which it produces is to be distinguished from intermittent fever by the want of complete apyrexia between the paroxysms.

SKODA.—*On Temporary Insufficiency of the Valves.* Allg. Wien. Med. Ztg., viii, 1863. Schmidt's Jahrb., vol. 118, p. 35.

Skoda records a case of typhoid fever, proving fatal, where the valves were found healthy, though during life there had been a systolic bruit over the left ventricle, with intensification of the second sound of the pulmonary artery. He ascribes the murmur and valvular insufficiency to paralysis of the muscoli papillares, and states that the same occurs occasionally in cases of hysteria, chorea, and epilepsy. The patients have palpitations, severe dyspnœa, and appear in danger of dying, but suddenly recover completely.

SKODA.—*On the Diagnosis of Pericarditis.* Allg. Wien. Ztg., viii, 1863.

Schmidt's Jahrb., vol. 119, p. 32.

In order that retraction of the surface of the chest in systole may take place, it is necessary that the heart should be fixed so that it cannot glide downwards; and, further, the left lung must be fixed so as to be unable to advance forwards over the heart. The phenomenon is most marked when the heart is attached to the vertebral column behind and to the wall of the chest in front, the two layers of the pericardium being adherent everywhere. If the retraction does not occur at a part of the chest wall corresponding to the apex, it does not indicate adhesion of the pericardium. If, for instance, the intercostal space corresponding to the base of the heart is retracted and that corresponding to the apex bulged out during systole, this only signifies that the heart moves downwards, and that the lung cannot enter into the space left by the base. Retraction of the epigastrium does not imply pericardial adhesion, unless one is sure that the heart's apex lies in the epigastrium. As to the diagnosis between pericardial exudation and enlargement of the right heart, Skoda remarks that, omitting the case of adhesion having occurred between the heart and the pericardium, and between the latter and the wall of the chest, a considerable bulging of the wall of the chest (unless the result of rachitis) is to be regarded as a sure sign of pericardial exudation. Friction sounds and feeble impulse of the heart indicate exudation. Signs of insufficiency and stenosis of the mitral valve indicate hypertrophy of the right heart. Both conditions may coexist, and operate to produce the extended dullness.

DEMME, R.—*On the Anatomy and Diagnosis of Myocarditis.* Schweiz.

Ztschr. f. Heilk., i, pp. 79, 461, 1862. Schmidt's Jahrb., vol. 120,

p. 44.

The acute parenchymatous disease, as a rule, attacks both ventricles, but the left first and most severely. The papillary and trabecular muscles are among the parts most highly affected. In two of the four cases the myocarditis was quite uncomplicated with inflammation of the endo- or peri-cardium; in the other two cases the pericarditis appeared to be the result of the primary disease. Ecchymoses in the epicardium over the principal inflammatory foci were constantly met with; they were most numerous when the coronary arteries were atheromatous. Acute myocarditis is not always associated with acute morbus Brightii. There is nothing peculiar in the dropsy attendant on the heart disease. Among the symptoms, the most constant and manifest were the decrease of the heart's energy, the loss of rhythm in its movements, increasing frequency of the pulse, steady diminution of its size, and its continuous undulatory character. For some time before death the heart's contractions were more numerous than the beats of the pulse. Systolic bellows murmur, from insufficiency of the auriculo-ventricular valves, occurred in three of the four cases. In two cases the first sound of the heart became indistinct and was lost. As the power of the heart declined the temperature sank, so that there was very little indication of fever. The twenty-four hours' amount of urine was remarkably small; the decrease was specially observable towards the close of the disease, and affected both the quality

as well as the quantity. The urea became gradually less, and latterly the uric acid. In all the cases the urine was albuminous, in two it contained glucose. The duration of the disease varied from forty-three to about five days. In two cases it appeared that over-exertion in lifting weights was the cause.

KIRKES, W. S., M.D.—*On Ulcerative Inflammation of the Valves of the Heart as a cause of Pyæmia.* Brit. Med. J., Nov. 7th.

Kirkes relates a case which was very obscure during life, but of which he sums up the pathology as follows, after a careful post-mortem examination. In the first instance there was ordinary rheumatism; then acute ulcerative inflammation of the mitral valve; then contamination of the arterial blood by lymph, pus, and other inflammatory products from the valve; then the signs of general blood-poisoning, namely, febrile disturbance of a low typhoid form, nausea, vomiting, profuse diarrhœa, and erythematous eruption; then local suppuration in the parotids; lastly, obstruction of the cerebral vessels, with consequent softening of the brain substance and hemiplegia, all terminating in death, and revealing proofs of blood poisoning in various parts of the body.

SKODA.—*On Cardiac Murmurs not easily explicable.* Allg. Wien. Med. Ztg., viii, 34, 1863. Schmidt's Jahrb., vol. 120, p. 303.

As aids in the diagnosis, Skoda lays down, that in any part where it seems possible that disordered innervation is the cause, it should be so regarded. If a systolic murmur is heard in the corresponding situation, and the systolic cardiac murmur is retarded, is more perisystolic, the murmur probably arises in the arteries of the thoracic wall, especially if a similar one can be found in other arteries. That the murmur is produced in the conus arteriosus may be concluded when the systolic murmur is most marked at the base of the heart. Such murmurs are very difficult to distinguish from those produced at the orifices of the large arteries, but they certainly occur.

SCHNEIDER.—*Case of Complete Obliteration of the Aorta.* Wien. Wchnbl., xviii, 26, 1862. Schmidt's Jahrb., vol. 117, p. 39.

The aorta and its large branches were dilated as far as just beyond the origin of the left subclavian, beyond which it was entirely obliterated. The point of insertion of the duct. Botall. was marked by a funnel-shaped depression. The patient from whom the preparation was taken died of pneumonia, and had not suffered during life with symptoms referable to disorder of the circulation. Skoda considers the obliteration to depend on a continuation of the substance closing the duct. Botall. beyond its normal limits, and says that the condition can always be diagnosed by the whirring murmurs in the dorsal intercostal arteries, and the absence of pulse in the lower half of the body. Stofella alludes to a case where, owing to a very free communication between the arteries given off above and below the obliteration, there was a sufficient collateral circulation established to give a pulse in the crural artery synchronous with the radial.

DUCHEK.—*On Obliteration of the Aorta at the point of entrance of the Duct. Botallii.* Wien. Wehnl., xviii, 37—39, 1862. Schmidt's Jahrb., vol. 117, p. 39.

Duchek lays stress on the injurious effects of this obliteration in consequence of the insufficiency of the collateral circulation. The obstruction may produce no serious disorder for a long time, until some casual circumstance—a mental emotion, an unusual effort, or an intercurrent disease—makes the compensatory apparatus insufficient. Symptoms of heart disease then appear, general dropsy, or sudden death, as in Römer's case. The following conclusions are arrived at from a review of 51 cases:—(1) In the first period of infancy, soon after, or during the development of the stenosis, there died—as far as was clearly ascertained—only 2 patients manifestly in consequence of the rapid development of the obstruction. (2) After a longer continuance of the stenosis there died 38 patients, the majority between the ages of 20 to 50 years, only a few between 50 and 60. (a) Laceration of the heart and great vessels occurred in 18 cases under the age of 20. (b) When the disease lasted longer, general dropsy occurred and marasmus, and death ensued with one exception during the dropsy (8 cases, or 20 per cent.). (c) In 3 cases death ensued suddenly. (d) In 16 cases the patients died of accidental diseases not connected with the stenosis, and almost all affecting the respiratory organs, as of pneumonia 9, of pleurisy 2, of bronchitis 1. Duchek is inclined to attribute this in part to increased pressure within the lesser circulation. (e) One patient, aged 92, died of senile marasmus.

ROBERTS, W., M.D.—*On the successful use of Pot. Iodidi in the Treatment of Aneurism.* Brit. Med. J., Jan. 24th.

Roberts records three cases, in two of which decided advantage appeared to result from the administration of Pot. Iod. In the first case the patient had a soft pulsating elevation rising about a quarter of an inch above the surrounding level; the first bone of the sternum and its immediate vicinities were observed to be bulged out, and to be the seat of a heaving pulsation. Over the bulging parts there was an area of dulness, measuring transversely four and a half inches and vertically three and a half inches. Under the use of Pot. Iod. the bulging diminished, and the dulness area shrank to three and a half inches transversely and two and a quarter vertically. In the second case a projection of the clavicle to the amount of half an inch subsided almost to its natural position, while cough, pain, dyspnœa, dysphagia, and hæmoptysis ceased.

OSBORN, A. G.—Brit. Med. J., Feb. 7th.

Records a case of aneurism of the aorta pressing on the superior vena cava.

HALDANE—Edin. Med. J., Jan.

Reports the case of a female, æt. 50, in whom three abdominal aneurisms underwent a spontaneous cure by calcareous degeneration of fibrine coagulating in their interior. The first aneurism involved the

origin of the cœliac axis; the second that of the superior mesenteric; the third, smaller than the others, that of the left supra-capsular and left renal arteries. Both the cœliac axis and the superior mesenteric were completely obliterated. An aneurism the size of a small apple projected against the trachea from the transverse portion of the arch. The aortic valves were incompetent.

COCKLE, J., M.D.—*On Aneurismal Tumours involving the Neck.* Med.

Tim. and Gaz., May 16th, 23rd, 30th.

Cockle relates a case in which an aneurism of the ascending and transverse aorta formed a bipartite tumour in the right neck, extending from between the second and third right intercostal spaces to the angle of the jaw. There was agonising pain in the right side of the neck and shoulder, and paroxysms of suffocation occasionally occurred. With regard to *differential diagnosis*, he notices the possibility of confounding an aneurism with ordinary strumous abscess, or with cystic growths, connected or not with the thyroid, with encephaloid tumours, and even with exaggerated arterial pulsation in exophthalmic goitre. Many aneurisms yield few or no peculiar signs, and none certainly that are pathognomonic, while, on the other hand, non-aneurismal tumours in contact with and pressing upon an artery may yield both shock and murmur. The distinction of the artery actually involved in the case of aneurism is often no easy matter. An aneurism originating in the aorta, and involving its tributaries, may ascend the neck even to the angle of the jaw; and, on the other hand, an innominate or even subclavian aneurism within the scaleni may descend the chest, pressing on or even displacing the aorta, and giving rise to intrathoracic dulness and murmur. Dilatation of the arch of the aorta and trunk of the innominata may much resemble aneurismal tumour, especially if the pressure has condensed the supra-clavicular portion of lung. Anomalies in the course of the innominata may also cause phenomena much resembling those of aneurism, particularly when the upper bone of the sternum is short. With Dr. Holland's conclusions respecting aneurisms of the innominata he coincides on the whole, but excepts that variety which, either false or true, arises from the upper part of the ascending and angle of the transverse portion of the aorta, involving often the innominata and other arteries. These aneurisms, instead of inclining to the left, as Dr. Holland affirms of those of the transverse portion of the aortic arch, have a decided inclination to the right. It is almost exclusively this form which occasionally passes the first rib, and ascends the right cervical region.

CEJKA.—Prag. Vjhrschr., p. 89, 1863.

Among his aphoristic observations on chest diseases, states that aneurisms and tumours may sometimes be distinguished by careful examination of other arteries. In aneurisms the corresponding arteries of opposite sides are of unequal diameter; those arising from an aneurism are usually of smaller size as compared with their fellows. This disparity is not observed in tumours, even when they press on arteries. The occurrence of a thrill (erzittern) in the tumour is decisive.

DOUGLAS, A. H.—*Substernal Aneurism: its Relation to Disease of the Heart.* Edin. Med. J., Oct., 1863.

Douglas sums up his paper in the following considerations:—(1) Hypertrophy of the heart is probably in all cases a secondary lesion, and is the result of nature's effort to counterbalance a pre-existing hindrance to the circulation. (2) Dilatation of the heart is the natural resolution of local diseases which may, in the first instance, excite hypertrophy. Embarrassment of the circulation, with venosity of the blood, dropsy, &c., usually arises with this consecutive dilatation. (3) Valvular disease of the heart often coexists with aneurism of the aorta, especially peripheral aneurism; the sigmoid valves most usually are affected, perhaps from contiguity. (4) In such cases the consecutive condition of the heart does not materially differ from that which occurs in cases of simple valvular insufficiency. (5) A diseased condition of the arterial coats often exists in conjunction with hypertrophy of the heart, as is commonly seen in cases of apoplexy with disease of the cerebral arteries. (6) There is reason to think that disease of the arterial coats may exist extensively in the system, though the aorta and the arteries at the base of the brain usually present its most advanced effects. (7) In this state the aorta is apt to undergo dilatation, constituting usually peripheral aneurism. (8) The diseased state of the arteries destroying their elasticity, the circulation is to that extent obstructed, and the left ventricle, under the additional burden, undergoes hypertrophy to compensate the lost tonicity of the arteries. (9) In such circumstances hypertrophy arises in a way analogous to that which occurs in cases of disease of the valves, &c., of the heart. (10) Consequently, hypertrophy of the heart and peripheral aneurism stand associated together as effects of the same diseased condition of the arteries. (11) Consecutive preponderating dilatation may occur in such cases, but the progress to that stage is liable to be hindered by the accidents of hypertrophy, as, for example, of cerebral hæmorrhage, which is promoted by the coexisting disease of the arteries. (12) Aneurism of the aorta is often altogether its origin, and has no tendency to involve the heart in associated or consecutive disease. (13) Such aneurisms are usually saccular, but they may be peripheral, and they suggest the probability of localization of the disease of the coats of the artery. (14) Proximity to the heart in such cases does not affect the organ.

DOUGLAS, A. H.—*Substernal Aneurism: Clinical Illustrations of its Diagnosis.* Edin. Med. J., Nov., 1863.

Douglas concludes his paper with the following statement of some of the considerations that arise out of his cases, and which were of value in their diagnosis:—(1) The all but invariable importance of dulness of percussion. (2) The great diagnostic value of a cavernous, intensified character of the cardiac second sound, heard over the seat of disease rather than at the sigmoid valves. (3) The rarity and uncertainty of diastolic murmur as a sign of aneurism. (4) The importance of pain as a symptom; observing its neuralgic form and its conjoined fixed or local and lancinating character. (5) The relation of pain of the shoulder to interference with the phrenic nerve. (6) The occasional vomiting of

ingesta as a consequence of irritation of both phrenic nerves. (7) The occasionally temporary character of laryngeal symptoms. (8) The diagnostic value of concurrent inflammation of the lungs. (9) The import of difficult expiration, as indicating mechanical obstruction of the trachea.

CONCATO, LUIGI.—Schmidt's Jahrb., vol. 120, p. 303.

Records a case of aneurism of the cœliac axis in a male æt. 33. The sac at the time of the fatal rupture was as large as the head of a six-months fœtus. The diagnosis turned on the non-mobility of the tumour along with the diaphragm, and therefore on its retroperitoneal situation, on its expanding equally in all directions during systole, on its spherical shape and smooth surface, in which respects it differed from aortic aneurism, and on the non-retardation of the pulse in the crural arteries.

HABERSHON, S. O.—*On Pulsating and Aneurismal Tumours of the Abdomen.* Guy's Hospital Reports, 1863.

Habershon groups the symptoms of aneurismal disease in the abdomen under the heads of—(1) the negative signs; (2) the character of the pain; (3) the character of the pulsating tumour. As to the first group, the absence of constitutional disturbance is remarkable; the patients have often the appearance of robust health; there is generally an absence of the symptoms of organic gastric disease, as well as of effusions into the peritoneal cavity; the urine is generally normal. Vomiting, Habershon thinks, is less frequent than Hodgson considers it, and constipation is not so invariable as Dr. Copland describes it. As to the second group. The pain is of a twofold kind, one being constant and uniform, the other agonising and paroxysmal, the latter appears to be owing to the distension of nerve-filaments spread over the aneurismal sac. The pain follows the course of some of the spinal nerves; it may be attended with cramps in the legs, numbness in the feet, and in rare cases with paralytic symptoms. Occasionally the pain has been located in the joints, and the disease has simulated rheumatism. The pain is increased by constipation or flatulent distension. In some cases there is no pain. As to the third group, the pulsation of aneurism is diastolic in character; it is by no means always equally distinct, for when occurring at the posterior part of the aorta, close to the diaphragm, and when the sac passes beneath the strong lumbar fascia, pulsation is very indistinct at the earlier stages. A bruit may often be heard at the site of the tumour; it may be systolic or double, but is not unfrequently absent. As the sac enlarges, there may be visceral displacement; the liver may be pushed forwards, or the kidney, spleen, or pancreas. The thoracic viscera are also encroached on, and dyspnoea and palpitation are induced. The heart is generally healthy in abdominal aneurism. The disease may terminate fatally by rupture of the sac or by increasing exhaustion. If the blood be effused slowly behind the peritoneum, the pain may be at first relieved, but subsequently a state of semi-syncope takes place. The extravasation may descend as far as the thigh, and simulate psoas abscess. The rupture takes place frequently into the pleura, and most often on the left side. Perforation into the alimentary canal is rare. The

most frequent cause of aneurism of the abdominal aorta is excessive exertion; sometimes it is referred to a sudden strain of the abdominal muscles or to a blow. The duration, after severe symptoms have appeared, is rarely as much as eighteen months. From the appearance, however, of the first symptoms, seven or eight years may elapse. The diagnosis is most difficult when some tumour presses upon the aorta. In this case, however, the pain is less severe, the pulsation is lessened by placing the patient on his hands and knees so as to remove pressure from the artery, and there are usually other symptoms indicating disorder of some adjacent viscus. Records are given of sixteen cases.

MEISSNER, H.—*Report on Thrombosis and Embolism.* Schmidt's Jahrb., vol. 117, p. 209.

The first part is chiefly occupied by an account of Panum's experimental researches, which are published at length in 'Virchow's Arch.,' xxv, 3—6, pp. 308—338, 433—530, 1862. He finds—(1) That the absence of arterial blood in the coronary arteries of the heart by no means causes immediate arrest of its movements, since its rhythmical contractions will persist even for hours after the capillaries and veins have been filled with oil and the arteries with wax. As under these circumstances the heart's action can still be temporarily arrested by irritation of the vagi, it follows that Brown-Séquard's view is incorrect, which supposes that this effect is produced by contraction of the coronary arteries, in consequence of stimulation of their vaso-motor nerves. (2) That when sudden death is produced by embolism of the pulmonary artery, but little blood is found in the left heart, and the quantity is smaller in proportion as the death has been complete and sudden. A small quantity of blood is, however, always found in the ventricle. (3) When death ensues from embolism of the pulmonary artery, the heart, as a rule, continues to pulsate after all signs of life on the part of the cerebro-spinal nervous system have quite ceased. (4) The arrest of the heart is produced by over-distension of the right cavities with venous blood; occurs consequently in diastole, and usually soon after the cessation of the respiratory movements. (5, 6) Sudden death depending on embolism of the pulmonary artery is produced by the arrest of the flow of arterial blood to the brain and medulla oblongata. If the arrest is complete, irritative phenomena are slight and soon cease, but they are more considerable and last longer when the arterial current is less completely arrested. Panum states that when death occurs rapidly, from perfect obstruction of the pulmonary artery, the first and most constant phenomenon is the extreme pallor of all the visible parts of the body and anæmia of the white substance of the brain. There then ensued immediately constant tetanic extension of the limbs, involuntary evacuation of the urine and fæces, very deep convulsive respiratory movements, and in one to three minutes death. When the deprivation of blood is less complete, signs of irritation of the sympathetic nerve ensue, the eyeballs project, the lids are wide open, and the pupil dilated. These symptoms seem to result from altered nutrition of the nervous centres. (7, 8) Complete embolism of the cerebral arteries produces death just in the same way as that of the pulmonary artery. Partial cerebral embolia is apt to be more fatal than

partial pulmonary, and, when certain large branches alone are affected, will produce special symptoms according to the part of the brain which is rendered anæmic. (9) The increase of the original embolon by additional deposits may cause death days and weeks after its first formation. (10) When lobular foci of suppuration form in the lungs, it seems very probable that coagula may be generated in the pulmonary veins, which then pass into the systemic circulation and cause arterial obstruction. (11) When unirritating substances, as wax-globules, injected into the vessels, have caused obstruction, they become capsulated by the thickening of the wall of the vessel and the formation of a connective-tissue envelope, which is thicker around the smaller (proportionally) than around the larger. (12) Virchow finds that the dissolute blood-crisis produced by the injection of putrid material into the blood disposes, certainly, to sanguineo-serous infiltration of the lungs, as well as of other parts, but even when combined with embolia of the pulmonary arteries has no influence in generating the so-named lobular (pyæmic) processes or infarcta. (13) Globules of quicksilver, arrested in the pulmonary vessels, produce, as Cruveilhier found, inflammatory foci around them; but this does not depend on mechanical obstruction of the vessel, but on a specific chemical irritation of the surrounding pulmonary tissue. (14) Plugs consisting of nitrogenous substances undergoing decomposition provoke—in the vicinity of those spots of the pulmonary artery where they stick—inflammations, which may spread over a considerable extent of the lung, but which start from the spot where the plug is situated. The alteration of tissue is therefore greatest near to the plug, and may end with limited gangrene, the inflammation receding from the surrounding area. The inflammatory irritation is caused by the products of decomposition of the putrefying plug. (15, 16) Perfectly fresh coagula of healthy blood may, in the same individual from whom the coagulum proceeds, excite exquisite lobular processes or infarcta in the lungs, when embolism of the pulmonary artery occurs. It is, however, only in peculiar instances that this takes place, most of the coagula dissolving without producing any alterations in the parts adjacent to them. (17) An altered blood-crisis, however induced, seems to have no influence in determining the formation of infarcta. (18) Neither does it appear that the different quality of the emboli is the effective cause, as some fragments of the same coagulum will produce infarcta, while the majority, which are of quite similar composition, give rise to none. (19) It must therefore be assumed that there is a peculiar predisposition in different parts of the lung to be affected in this way by the coagula which become impacted in them. (20) Pus, even when left a long while in contact with the blood contained in the veins of the living body, produces no coagulation. (21) Besides the larger infarcta, there were constantly found, after embolism of the pulmonary artery with recent coagula, very numerous, small, hyaline, or yellowish-white fibroid nodules, which Virchow regards as developed on minute embolic coagula. Numerous transition forms were observed between these and the lobular infarcta. (22) It is not improbable that miliary tubercles may be produced in the same way by embolism of the smallest branches of the pulmonary artery. In injections of tuberculous human lungs, enormous

local thickenings are seen of the walls of these very vessels.

II. Embolism of the arteries of the systemic circulation.—The results of Panum's experiments, in which wax, mercury or air, was injected into one crural artery in the direction contrary to the current, were very various, and exhibited pathological phenomena which have been referred to other causes. They are as follows:—(25) Paralysis of the posterior part of the body, and red softening of the lower half of the spinal cord. Vomiting and diarrhœa, with enormous tension and repletion of the whole portal-vein system, with formation of ulcers in the stomach (corresponding to the round gastric ulcer), and also of ulcers in the intestines, which especially involved Peyer's patches, like those of enteric fever. Septic alteration of the blood, in consequence of partial gangrenous destruction of the intestinal mucous membrane. Tetanus, terminating fatally in two hours, without discernible alteration of the spinal cord, induced by embolism of the arteries of the brain and of the medulla oblongata. Eczema of the lips, gums, and muzzle, from lodging of air-vesicles in the small arteries of these parts. Loss of hair and purpuric ecchymoses of the skin. Violent rheumatoid pains, gradually increasing palsy of the muscles, and wasting of the muscular tissue. Mingling of albumen and blood with the urine, and morbid changes in the kidneys, in consequence of emboli in the vasa afferentia, as well as in the Malpighian tufts. Pathological alteration of the liver, partly from small extravasations from the portal vein, partly by the formation of firm, tumid, yellow and red-spotted patches of the hepatic tissue, in which the hepatic cells were partially dissolved, and contained yellow pigment. Secondary capsulating of some mercurial globules, which had probably remained a long while in the heart, with coagula of blood. Infiltration, inflammation, and aneurismatic dilatation of some arteries where mercurial globules, thus capsulated, had stuck. (27) The enormous hyperæmia and increase of blood pressure which is set up in the portal system proves that the peristaltic action of the intestinal villi and of the intestinal tube, which is paralysed by the embolism, is an essential motor force of the portal circulation. The same may be said of interruption of the current in the hepatic artery. (28) The early appearance of the nausea, vomiting, and diarrhœa, makes it probable that they are produced directly by the hyperæmia, rather than from the putrid infection of the blood.—The next part of the report deals with the anatomical conditions of thrombosis and embolia. Notta denies that irritation of the inner and middle coats of arteries ever produces a plastic exudation, and would consequently exclude arteritis from the causes of thrombosis. Lancereaux, on the other hand, has found actual membranous exudations on the inner surface of arteries, especially almost constantly among drunkards in the pulmonary artery and its main branches, and once also in a syphilitic person in the carotid. These membranes have contained, not only elements of connective tissue, nuclei, cells and fibres, but even capillaries. When a thrombus is occasioned, as often happens, by atheromatous disease, it takes the shape of the diseased vessel, but is not closely adherent to its walls; its ends are conical; when recent, it is brownish, firm, fibrous, laminated; in a more advanced state it is yellowish gray, granular, soft, and even diffuent in the middle, but always contains altered blood-

globules. In cases of embolism the walls of the vessels are for the most part unaltered, as far as the unaided eye can perceive; but Lebert has, after nineteen days' duration, found with the microscope a considerable increase of the connective-tissue-corpuscles, and a division and multiplication of the nuclei. Grisolle also found thickening of the vascular coats and adhesion of the same with the embolon in a case where a calcareous fragment driven into the middle cerebral artery had excited there inflammation and fibrinous depositions. The embolon is very variously shaped, mostly fusiform or rounded, colourless or whitish, sometimes gray or brownish, always dry, hard, and resisting. It is mostly fibrinous, or is separable into two parts—one peripheral, which is always fibrinous and sometimes very long; and a central, directed towards the heart, which is calcareous, atheromatous, or fibrinous also, and contains sometimes heterogeneous elements, as warty growths or bits of the valves. Sometimes the embolon is absent, having probably become absorbed. In cases of old standing the vessel itself sometimes disappears. The softening which occurs in the brain as the result of the deprivation of the part of blood may be red, yellow, or white, according to the stage in which it is examined. *Red* softening commences after twenty-four or forty-eight hours, dating from the apoplectiform attack, and lasts eight to fourteen days. It is characterised by moderately diminished consistence, a red, brownish, or rosy colour, sometimes united with a slight tumefaction of the tissue, and always with increased tension and injection of the collateral vessels. The red colour is not produced solely through the increased vascular injection, but also by the transudation of colouring matter into the parenchyma (ecchymoses), and by capillary, punctiform effusions from the collateral vessels. Under the microscope the nerve-fibres and -cells appear partly normal, partly already broken and granular; the capillary walls for the most part unchanged—however, sometimes filled with coagulated blood. *Yellow* softening does not appear till after the lapse of fourteen days. The necrotic cerebral mass is by this time more pappy; the nerve-fibres and -cells are broken up, dislocated, granulous, scarcely distinguishable, in a state of regressive fatty metamorphosis. The capillary walls are covered with gray fatty granulations; contain diminished blood-corpuscles, especially granular hæmatine from the shrunken red globules, and enlarged granular white corpuscles. The yellow colour depends on the latter, on coloured blood-globules deprived of their hæmatine, and also sometimes on the formation of fat. *White* softening does not appear until several months have elapsed. The cerebral mass is then completely white, diffuent like cream, with some whity flocculi suspended in it. Nerve-fibres and -cells have vanished, capillaries and blood-corpuscles are metamorphosed, and under the microscope numerous granulations are seen, oil-drops, and granular cells, which give the fluid the greatest resemblance with the colostrum. This third phase only occurs in large patches of softening, as smaller ones are always resorbed. Sometimes, even in larger patches, the softened mass is absorbed, which constitutes then a fourth phase, which is characterised by superficial depressions, the formation of cysts and cicatrices, and forms the termination in recovery. One peculiarity of cerebral softenings is that the whole region belonging

to the obstructed vessel is never affected, but only the middle part, on account of the influence of the collateral circulation. Cerebral softening from plugging-up of the capillaries differs from that which has been described by the existence of small scattered foci on the surface or in the interior of the cerebral substance; and in softening from obstruction of the venous sinuses, there are the same, corresponding to the course of the sinus, mingled with numerous capillary apoplexies and red colour of the softened pulp. Softening also ensues from encephalitis, and is characterised by actual formation of pus, with induration of the surrounding tissue. Softening may further be produced by the formation of plastic exudation or alteration of the connective tissue in the brain, probably as a result of constitutional syphilis. Lastly, tumours or hæmorrhagic effusions may in a kind of mechanical way produce softening. All these latter forms of softening are, however, comparatively rare, as Lancereaux in twenty-two cases found sixteen to depend on obstruction of vessels. In most of the other internal organs the results of vascular obstruction are quite similar to the forms of softening which occur in the brain. They are known under the names of capillary phlebitis, of multiple fibrous deposits, capillary embolias, but especially as hæmorrhagic or fibrinous infarcta. Three stages may be distinguished. In the first there is some swelling of the diseased part; the parenchyma is not or only a little softened, sometimes even indurated; the colour is red, brownish, or violet; the form in the spleen and kidneys is more conical, in membranous organs is flatter and patch-like. The blood-vessels are full of blood, and the tissue-elements begin to degenerate and to show granulations. No deposit of heterologous material is ever found, and the name of fibrinous infarctum is therefore incorrect. In the second period the infarctum becomes more yellow, and gradually darker; its consistence varies according to the amount of connective tissue in the part; in the liver, spleen, and kidneys it is increased, so that one speaks of a yellow induration of these organs. In the lungs the infarctum is like an old apoplectic extravasation or the nucleus of a lobular infiltration. The microscope discovers no new-formed connective tissue, but only the granular debris of tissue-elements, white blood-cells, and very numerous molecular granulations. The vessels and the connective stroma undergo, though more slowly, the alterations which have been mentioned. The blood also decomposes, the colourless corpuscles becoming more or less granular; the red, irregular, granular, pale; and the free hæmatine collecting into amorphous masses. The third phase is different according to the size of the obstructed vessels. If they are small, the broken-up tissue is quickly absorbed by the adjacent blood-vessels, and depressed cicatrices remain. When larger vessels are plugged up, only a part of the involved tissue is absorbed; the rest becomes diffuent, and forms a milky, puriform, or greenish fluid, surrounded by irregularly torn walls. The microscope detects here nothing but debris of the tissues and altered blood. There is no ground for the opinion that inflammation and suppuration have occurred. The cause of embolia in most cases is cardiac disease of some kind or other, and especially that which Meissner designates *endocarditis ulcerosa acuta*, which runs its course with typhoid or pyæmic symptoms, and occurs especially in weakened persons in the puerperal condition and in acute rheumatism.

The ulcerations are almost always in the valves of the left ventricle, occasionally in those of the right; they result from an inflammatory molecular decay of the endocardium, and become by the roughness of their surface the seat of fibrinous deposits, which are subsequently carried away by the circulating blood, and get arrested in different parts. The symptoms of this acute, ulcerous endocarditis are various; they may either be purely ataxo-adynamic, with great depression, heat, rigors, somnolence, delirium, dry tongue, bronchial catarrh, meteorism, and diarrhœa; sometimes enlarged spleen, or ecchymoses and sudamina, presenting by their continuous course the greatest resemblance with exanthematic typhus; or the phenomena may be more like those of pyæmia, paroxysmal rigors intervening among the ataxo-adynamic manifestations. In both cases jaundice, more or less severe, often occurs, and has been sometimes mistaken for the primary disease. The progress of this is so rapid that its changes can sometimes be followed from day to day. In cases where the heart is not diseased it is not unusual to find affections of the aorta or other vessels, dilatation, atheroma, ulcerations, or aneurisms. In other cases various organic diseases are found, as pneumonia, renal degeneration, cancer, or a traumatic injury, but the connection of these with the embolic process is much less frequently demonstrable. In spontaneous thrombosis there are more frequently precursory symptoms than in embolia; the condition gets gradually worse, and improves less rapidly. When embolia of the cerebral arteries occurs, obstruction of the carotid or its branches occasions sudden giddiness, loss of consciousness, syncope, deprivation of intellectual and motor power, blunting of sensibility, sometimes involuntary stools, and but seldom vomiting. This attack is, if death does not take place, transitory, and leaves behind one-sided palsy of the body or amaurosis, besides loss of speech and disorders of the intellect. Recovery may be complete when one carotid trunk is obstructed, but is always imperfect when the obstruction is situated on the further side of the circle of Willis. When the vertebral or basilar arteries are obstructed, loss of consciousness and intellectual disturbance more rarely occur, but giddiness and vomiting and sensory disorders are more frequent. The attacks are less sudden, and improvement also is more gradual. Recovery, as far as existing records show, is only possible when the collateral circulation is established before forty-eight hours have elapsed from the period of the obstruction. The diagnosis of cerebral embolia from cerebral hæmorrhage or thrombosis is often difficult, and by no means clearly to be made. The history is our chief guide as regards cerebral hæmorrhage, as the symptoms are in both affections essentially the same. The subjects of apoplexy before the attack have a strong constitution and good health, and receive warnings in the form of determinations of blood to the head, giddiness, drowsiness, and sense of formication in their limbs. The subjects of embolia, on the contrary, have already been depressed by acute or subacute heart affections, and the attack ensues without premonitory symptoms. The diagnosis of pigmentary embolia, where comatose and convulsive attacks take place and the cerebral function is suddenly abolished, is determined by the presence of pernicious ague fever. The age of the patient is an important item for consideration; acute rheumatism and endocarditis are diseases of early life, while apoplexy belongs mostly to the later periods.

Cerebral thrombosis, as compared with cerebral embolia, occurs in a much more advanced period of life, after pre-existing cerebral symptoms, and sometimes gradually advancing disease; is more associated with fatty change of the heart and arcus senilis, and less with valvular disease; the radial arteries and others are sometimes ossified, but gangrene of the limbs and infarcta rarely occur. Lancereaux distinguishes an inflammatory and non-inflammatory form of thrombosis of the cerebral sinuses. Of seventy-four cases he collected, thirty-nine were of the former and thirty-five of the latter kind. Virchow and v. Dusch do not, however, admit this distinction. Non-inflammatory thrombosis occurs chiefly in children and old men, and is induced by tumours which interfere with the circulation, or by weakening diseases, such as produce cachexia, also by weakness of the respiratory muscles, rachitis, tuberculosis, and peritonitis. Sometimes, especially when false membranes form, no cause can be detected. In this form the sinus is firm and tense, and completely filled by the thrombus. Purely fibrinous thrombi are at first completely homogeneous, firm, apparently lamellated, non-adherent to the wall of the sinus. At a later period they become yellowish, and soften in their interior into a puriform fluid, turbid, with granular and white corpuscles. The thrombus does not adhere to the wall of the sinus until a later period, in consequence of the formation of connective tissue. Pseudo-membranous formations, in the shape of plugs, bridge-like bands, or tendinous threads, are sometimes present, while on the distal side of the vessel the canal becomes obstructed by coagulated blood or fibrine. The superior longitudinal sinus is the usual seat of the thrombi, and they extend from thence to the adjacent sinuses. The brain is scarce ever inflamed, but frequently there is passive dilatation of the veins of the membranes and cerebral substance, with numerous spots of capillary apoplexy, in rare instances attaining a larger size. Patches of softening of the brain are often found, which are the result of the impeded circulation and defective nutrition of the tissue. The patches are mostly symmetrical, and occupy the surface of both middle lobes, involving especially the gray matter. The symptoms are very obscure. Epistaxis (in thrombosis of the superior longitudinal sinus), and unequal distension of the external jugular veins (in thrombosis of the lateral sinuses), are of no great value, especially when the patients are children. The consecutive phenomena are those of cerebral pressure, of passive congestion, and sometimes of softening of the brain. At first there is a fixed gaze, strabismus, cephalalgia, grinding of the teeth, contractions and convulsions; the latter occur also in adults, and resemble those of epilepsy. Subsequently there is clouding of the intellect, drowsiness, syncope, coma, dilatation of the pupils, giddiness, vomiting; more rarely, and only a short time before death, paralysis ensues. The diagnosis is very uncertain, and can only be based on a general consideration of all the symptoms, or be arrived at by exclusion of other affections. The previous occurrence of profuse diarrhoea with exhaustion of the system, of cerebral symptoms with depression of the fontanelles and imbricated overlapping of the cranial bones, as well as unequal distension of the jugular veins, should direct one's attention to a thrombosis of the sinuses. It should, however, be remembered that all these signs may be absent, especially in adults. *Inflammatory thrombosis* of the sinuses is invariably

connected with alterations of the scalp or of the bones of the head. In the thirty-nine cases collected by Lancereaux, caries existed thirty times and otitis interna twenty-four. The sinus adjoining the seat of mischief is always diseased; the superior longitudinal sinus and the symmetrical blood-channels are rarely affected. The thrombus seldom consists solely of fibrine, but is for the most part softened in its interior, and made up of fibrine, pus, and pseudo-membranous flakes. The walls of the sinus are usually altered, of a brownish or yellowish colour, thickened, easily torn, sometimes destroyed, and manifestly communicating with the carious bones. The dura mater at the seat of disease is grayish or blackish, adherent with the arachnoid, and covered with false membranes or pus. Purulent meningitis or abscesses in the brain often occur, not only in the vicinity of the obstructed sinus, but also sometimes at a distance, and unconnected with it. The brain is rarely discoloured or softened in patches; the pia mater œdematous or hyperæmic, the ventricles filled with serum or pus. Effusions of blood occur only in exceptional cases, because, by means of the previous inflammation, collateral channels have been formed, which is not the case in non-inflammatory thrombosis. In two thirds of all the cases other organs are also affected. As the result of purulent infection, metastatic abscesses form, hæmorrhagic or purulent infarcta (much oftener in the lungs than in other organs), suppurative pleuritis, enlargement and softening of the liver and spleen ensue. The cerebral symptoms are very varying, and less connected with disturbances of the circulation than with morbid changes in the brain, produced by the disease of the bone or the secondary purulent infection. At first there are signs of irritation, as pain in the head, delirium, cramps, and contractions; subsequently phenomena of pressure ensue, as depression of the mental powers, paralysis of motor and of sensory nerves, stupor, and coma. Yet sometimes there are no symptoms at all when multiple abscesses exist in the brain. In about half of all the cases there are metastatic pulmonary abscesses, with pain in the chest, cough, dyspnœa, often diarrhœa, sometimes jaundice, with or without swelling of the liver and spleen, pains in the abdomen and in the limbs, especially in the joints.

HESCHL.—*On Capillary Hæmorrhages in Melanæmia.* Oesterrh. Ztschr. f. prakt. Heilk., viii, 1862. Schmidt's Jahrb., vol. 117, p. 37.

He finds that there are two kinds of pigment, one dark brown, which may be free, but is also certainly found in the walls of the vessel; the other, consisting of roundish, pale-bordered pigment-grains, which circulate in the blood, and are probably only altered blood-globules. The chief places where both kinds of pigment are formed are in slighter cases the liver and spleen, in grave also the brain and spinal cord, the capillary system being the especial seat of the change. The cause of the pigment-formation is the spontaneous escape of hæmatine from the blood-globules. This is the result of malarial infection, and Heschl thinks that the altered hæmatine becomes the vehicle of the malaria. Cerebral capillary hæmorrhages generally, according to Heschl's researches, proceed from capillary aneurisms, both these vessels and the smaller ramifications being dilated at various spots. No pigmentary accumulations are met with, either in front of or behind the aneurisms. Morbus Brightii, which is present in

most cases Heschl regards, not as the cause of the hæmorrhages, but as a co-result of the malarious disease.

BEGBIE, J. W. — *On Vascular Bronchocele and Exophthalmos*. Edin. Med. Jour., Sept., 1863.

As the result of a prolonged discussion, Begbie is disposed to conclude that the true pathology of the bronchocele and exophthalmos, found in connection with cardiac palpitation and vascular pulsations and dilatations, lies both in the blood and in the nervous system, but that the primum mobile is the former; that an altered state of the blood—for a time stopping short of what is generally known as anæmia, in many cases amounting to well-marked anæmia—acts directly on the nerves of blood-vessels and on the nerves of the heart (sanguis moderator nervorum); that, as a consequence, their rhythmical movements are seriously affected, and dilatation of the heart's chambers, and of blood-vessels, arteries, but chiefly veins, results; that for a lengthened period the bronchocele is truly a vascular enlargement and dilatation, but that in course of time hypertrophy and degeneration of gland structure result; that the exophthalmos, which is not a necessary consequence any more than the bronchocele of this disordered state of blood and neurosis of blood-vessels, depends upon congestion and vascular dilatation of the ophthalmic vessels, with effusion of serum into the post-ocular cellular tissue; and, lastly, that a plan of treatment directed to the improvement of the condition of the blood, and at the same time to the state of the nervous system, is successful in effecting a cure, provided those organic changes in the heart, to which reference has been made, have not already been induced.

RESPIRATORY SYSTEM.

RICHARDSON, B. W., M.A., M.D. — *Researches on the Treatment of Suspended Animation*. Brit. and For. Med.-Ch. Rev., April, 1863.

Richardson states the question he proposed to himself as follows:—Given a healthy body, in which, without structural injury or change in any part or organ, life has been arrested by suppression of the chemical process of oxidation: how can such a body be restored? The cases included under this proposition are more numerous than might be expected. Richardson enumerates six classes, but in the present communication he deals only with the first two, comprising examples where death (apparent) has occurred either from obstructed respiration or from inhalation of a narcotic vapour. He discusses, *first*, the morbid conditions presented by these different forms of suspended life; *secondly*, the pathology, general and special, of these forms; *thirdly*, the modes of treatment. In mechanical obstruction of the trachea, after death, the blood is found fluid, but subsequently coagulates and does not appear to have undergone any chemical change. The condition of the heart varies with the length of time during which the death is taking place. If the death is extremely rapid, from the occlusion having been sudden and complete, there is always great engorgement of the right cavities, especially of the auricle, while the left side is firmly contracted and empty. If the death is less sudden, from the period of suffocation having been prolonged, the right cavities are full, as before, but the left also contain more or less of

blood, and are more relaxed. If in these examples the body is opened after the heart has entirely stopped the influence of the air produces reaction; within a few seconds after the exposure there is contraction of the right auricle, then of the right ventricle; if any blood remain in the left cavities their walls also follow, and the whole organ may appear in active play. Experimenters, on witnessing these contractions, have assumed that the action of the heart has been continuous, and that it was capable of performing its functions if the respirations were but adequately assisted. This is, however, a mistake; the action is a re-excitement consequent on the admission of air to its surface, and is due to a feeble combination of the oxygen of the air with the blood still remaining in the muscular walls. Again, the contraction observed, vigorous though it may seem, is not propulsive contraction; it never suffices to drive on a pulmonic circuit; it excites no dilatation of arteries; hence it is a useless exhibition of force, having as little power in restarting a circulatory movement as the jactitations of the muscles of the limbs in the typhus patient have power to make the patient rise and walk about. The condition of the lungs varies, like that of the heart, according to the time of dying. The lungs, in this respect, go with the left side of the heart. If the occlusion is sudden and complete, the lungs present no unnatural appearance; if the occlusion is imperfect and the struggle is prolonged, the lungs will be found containing blood in the pulmonary artery and in the pulmonary veins; while if the struggle is greatly prolonged, they are intensely congested. These differences in the degree of pulmonary congestion depend on the length of time during which the heart continues to act and to send blood to the lungs; and this, again, depends on the amount of air which the lungs can receive. If the occlusion of the trachea is sudden and complete, the heart stops very soon; if the reverse, the heart continues to act much longer. The sinuses of the brain are congested, like the right side of the heart, when death occurs rapidly. If the death is prolonged, there will be congestion, and a little serous effusion. These signs are much more marked when there has been pressure at the same time on the jugular veins. The glands are all more or less congested, as well as the alimentary canal. In drowning at common temperatures, the blood is found dark and fluid, but coagulates on exposure to air and warmth; the heart is congested on the right side, but also contains blood on the left; the lungs are engorged, and the bronchial tubes contain a little watery sanguineous fluid; the brain and the glands are congested, but not structurally injured. As examples of the phenomena produced by the inhalation of narcotic vapours, Richardson takes death from chloroform and from carbonic acid. The first, like several others, kills by an affirmative process, the other by simple negation. Chloroform destroys life by its power of arresting oxidation by its mere presence; carbonic acid by simply displacing air. The morbid appearances after death by chloroform are very definite when observed in their pure state, as in experiments on animals; in fatal cases occurring in the human subject they are more or less modified. The blood is not materially altered in any way, even its colour is not much changed. The condition of the heart after death from chloroform purely is invariably the same: the right cavities are filled with blood, and the left are contracted and empty; the arteries are also empty, or nearly so. If aus-

cultation be practised during the act of dying, while the finger is kept on the abdominal aorta, it is found that the heart's sounds can be heard for a few seconds after the respiration has entirely ceased. But during the whole of the last period of life, although the heart's sounds are heard, there is no arterial pulsation. In three large dogs the arterial pulsation ceased from one minute and a half to two minutes before the cessation of either sound. Richardson concludes from this that the cardiac action, attended as it is with pulselessness, is action developed feebly on one side only, viz., the right, and that death really begins at the heart, though the heart outlives the respiration. On exposure of the heart to the air, if the death has not exceeded half an hour, there occurs after a short pause active motion of the auricle and of the ventricle of the right side. This may continue for an hour if the temperature of the air surrounding is above 60° and not above 80° . But the action is utterly futile as a propulsive action; it never injects the lungs; it is neither attended with sounds nor with evidences of valvular tension. If the pulmonary artery be laid open, there is no jet; if air be removed, the action ceases; the motion is due, in fact, to a feeble oxidation of the blood in the parietes of the heart. The lungs are invariably free from congestion after pure death by chloroform. This is because the effect of the chloroform is primarily upon the heart through the blood. The right side, instead of affording a correct supply, transmits a current gradually decreasing in power and volume. To this current, however, no opposition is offered in the pulmonic circuit; it makes its way, therefore, to the left side, which propels it forward with a force steadily declining. Thus the circulation dies step by step, and with it the muscular power generally. At last a time arrives when the right side of the heart, feebly stimulated by the presence of blood, alone contracts, not with sufficient power to sustain its circuit or engorge the lungs, yet with sufficient power to convey to the observer that there is some remaining motion of the heart, even when the respiration has finished play. The brain and the glands are free from all serious organic injury; they may be a little congested. After death by carbonic acid the effects are greatly different, in many instances, from those which follow chloroform. Death ensued more speedily and with less convulsion when the carbonic acid was pure. The blood is not altered in any essential respect; its colour is darkened; coagulation ensues after removal from the body pretty soon, but is long retarded in the unopened vessels. In all cases the right side of the heart is surcharged with blood. If the death has been rapid, the left side is contracted and empty; if slow, it contains dark blood. On auscultation during the last moments of life, it is found that the respiration and the circulation fail almost simultaneously. On exposing the heart to the air after death, the reaction (which is always on the right side) is very feeble, and of short duration, and sometimes does not occur at all. The lungs are scarcely congested at all if the death is quick; if it is prolonged, they become intensely engorged, and very dark. The appearances are much modified by attempts at resuscitation. The brain is always congested after death from carbonic acid, and where the struggle is prolonged there is usually effusion of serum. Richardson has never found any extravasation. The pathology of all the above cases essentially depends on an interruption of the natural process of the combination of oxygen with blood; and this whether the morbid phenomena

approximate more to syncope or asphyxia. The obstacles to recovery in suspended animation are four:—(1) Coagulation of the blood. If this has occurred, life is extinct, but it is often delayed many hours, and never occurs within twenty minutes after the cessation of the circulation. (2) Blockage of the respiratory tract. This is mostly remediable, and so is (3) suspension of oxidation, if the blood can be brought into contact with air. (4) Broken blood-column. This is the great hindrance to reanimation. The break occurs in the pulmonic circuit, and is simply explained. Whenever, in any given case, the right side of the heart fails to propel its column of blood, or the lungs refuse to accept the column, the break occurs. Then the left side of the heart, having no change of blood, closes in permanent systole; then the arteries contract in their systole; then the right side of the heart, unable from the first to propel blood along empty vessels, and force open the contracted left heart, fails, moment upon moment, its own supply of sustaining blood through the coronary arteries being reduced; for a time it lives supported by the blood which it contains in its own cavities, but the life is imperfect, and the required labour enormous. When the current of blood from the right to the left side is unbroken, it is as a syphon stream flowing under the gentlest pressure from behind; but the syphon stream divided, a force is required equivalent to three times that of the health-acting ventricle to drive into the arterial scale the blood which is essential to every act of life. All the obstacles above named apply with greater or lesser force in every case. There are at the same time certain differences dependent on the degree of muscular irritability remaining after the different forms of death. This property continues longest after death by chloroform, the average duration being one hour and eleven minutes. Next, after sudden strangulation, the average being forty-six minutes. Next, after death by rapid suffocation in carbonic acid, the average duration being twenty-nine minutes. Next, after slow suffocation, either by obstruction or inhalation of carbonic acid, the average duration being from fifteen to twenty minutes. Next, after death by drowning, the average duration at common temperatures in adult animals being from five to fifteen minutes.

Richardson next proceeds to examine the means for restoring animation. He finds artificial respiration to succeed very seldom. In 78 experiments, in which the action of the heart of the animal operated on had positively stopped, artificial respiration produced not the faintest result. The modes of death were various—by chloroform, by carbonic acid, by drowning, by strangulation. In 27 experiments simple air was used for inhalation, the temperature being changed in series from 60° to 110° Fahr., and the experiment being commenced in every case within five minutes after the cessation of the circulation, and in 19 cases within one minute after the last contraction. The respiration was made in every case with double-acting bellows. These on one side removed air from the lungs; on the other side they filled from the air, on expansion. In closure they charged the lungs with pure air, and cast the impure air which they had removed into space. They were always applied gently, so as to imitate as nearly as possible the natural respiration of the animal. In every one of these cases no indication of reanimation was ever presented. On opening the bodies the lungs in more than half the cases were found emphysematous;

the blood on the right side of the heart was coagulated. Richardson concludes that artificial respiration, if it fails at first, if it does not catch the column of blood which may be crossing the pulmonic circuit, instead of being a means of restoring life, causes death. In 26 instances, as soon as the artificial respiration was fairly set up, the chest-wall was neatly removed, and the effects of the insufflation on the heart were observed. In every instance where this was done the right auricle was seen pulsating, and often the ventricle, but this contraction was never sufficient to fill the pulmonic circuit. It is worthy of observation, nevertheless, that whenever the air thrown into the lungs is heated above 96° there is an excess in the cardiac action, which excess is very great at a temperature of 120° , but even then the action is insufficient to cause a pulmonic current. The increased action is due to the diffused caloric, or it may be excited by simple exposure of the heart to external heated air. The influence of heated air on the dead heart deserves faithful record and remembrance. With oxygen gas no better success was obtained. After death the lungs were found to be unusually red; the left side of the heart was contracted, and the right side full of coagulated blood. Trials with oxyhydrogen, very dilute chlorine air, and ozonized air, all failed to reanimate, and Richardson concludes that all attempts to restore life by artificial respiration fail whenever the action of the heart has ceased. Whenever the action of the heart has not stopped, and a breath of new air restores the heart, respiratory acts will follow as the muscles of respiration receive a new charge of renovated blood. Hence the respiratory act is an act second to the circulatory, and artificial respiration is really a remedy acting primarily on the heart. There is, however, reason to think that the respiration of ozonized air in cases of slow poisoning by the more fixed narcotics, as opium, would be of essential service. As to methods of performing artificial respiration Richardson prefers the double-acting bellows to any, and in their absence he would use Dr. Silvester's. As to galvanism as a means of restoring life, Richardson says it can be tried as a means to excite the respiration, or to excite the heart. By adapting a metronome to an induction apparatus, it was found practicable to excite an artificial respiration singularly natural in its appearance. The best position for the poles was found to have one inserted through the larynx, and the other through a floating rib, including a few lines of the diaphragm. Richardson repeated, with this arrangement, all the experiments which had been made with the bellows, but the results were all equally negative. The same was the case when the current was used to excite the heart. There is, however, a considerable risk, in galvanizing the heart, of exhausting speedily its irritability, and so actually paralyzing it. The next means of resuscitation tried was injection into the chambers of the circulation of some substance possessing the power of exciting muscular contraction. Warm water, moist oxygen, peroxide of hydrogen, and ammonia, were tried, but no satisfactory result was obtained. The exciting influence of the latter on the heart and on the muscles was very remarkable. Richardson next inquires whether more good may not be accomplished by trying to set the circulation into action by mechanical means. He argues, if warm blood, or even warm water, taken from an external source, will reanimate muscular fibre, as we know it will, by

merely pushing it into the system, surely the blood natural to the subject himself will do the same if set properly in motion and aerated. Several experiments are related which seem to show that this procedure might have the desired effect if the difficulties incident to its execution could be surmounted. Richardson, however, seems to think that the blood-vessels should not be opened, and that the blood should be drawn, not pushed, over the pulmonic circuit. He states that he has seen such singular effects in animals from long-continued gentle warmth, that he "does not know, if we could understand all its bearings, to what it might not lead." It seems it is no uncommon thing that animals drowned or strangled, and sent to the manure-heap for burial, recover, even some hours after they have been placed there. The general conclusions arrived at are—(1) That artificial respiration can prove of avail only while the heart is transmitting a pulmonic wave of blood, and that, in the absence of this wave, artificial respiration is injurious—injurious to the lungs, and fatal to the blood. (2) That if a current of blood can be made to traverse the arterial channels, the muscles of respiration, previously at rest, will resume their action, and that respiration will follow, as at birth. (3) That the effect of gentle external warmth is to induce an arterial tide, and that this one subject is specially worthy of further inquiry. (4) That galvanism is a dangerous remedy in all cases. (5) That reanimation is possible between the time of so-called death, and the period of the coagulation of the blood.

TROUSSEAU.—*On Ozæna, and its Treatment.* Bullet. Génér. de Thérapeutique. Edin. Med. Jour., December, 1863.

In the first place, it is necessary not to confound ozæna depending upon the condition of the nasal fossæ with the fœtor of the breath caused by some affection of the mouth or throat. The simplest diagnostic means is to direct the patient to close his mouth and nose alternately during expiration; it is then generally easy to determine the source of the fœtor. Ozæna sometimes depends on the nasal secretions becoming offensive, from undergoing change with unusual rapidity. The remedy is to use the pocket-handkerchief more frequently and thoroughly. In some persons the secretions of the mucous membranes become very fetid under the influence of acute or chronic inflammation. A coryza will thus render the nasal secretions very offensive. Constitutional ozæna is specially associated with the scrofulous or herpetic diathesis, and presents an almost specific odour. This form of the disorder begins about the fourth or fifth year, increases towards puberty, diminishes, but does not disappear completely, in old age. The nasal secretions are usually purulent, and often very abundant; sometimes they dry up, and form crusts, which mould themselves to the interior of the nostrils. The odour is most disagreeable when the ozæna is connected with disease of the antrum, in which the matter remains, and from which it is discharged in streams on certain movements of the patient. In rarer instances the nasal mucous surface and its secretions are quite normal, but there is considerable fœtor. Of all the causes of ozæna, the most frequent is syphilis; this form more than any other leads to ulceration and necrosis. Treatment is by no means very successful, but with great perseverance on the part

both of the physician and patient good results are often obtained. In adults Trousseau recommends the use of the following powders, which are to be snuffed up the nostrils, after the secretions have been removed by water, twice or thrice daily:—Red or white precipitate gr. v +, powdered sugar ζ iv, M. Subnitrate of bismuth, Venetian talc, ana ζ iv, M. Chlorate of potash ζ ss, powdered sugar ζ iv, M. The bismuth may be used as often as the patient pleases. In children we must have recourse to injections of yellow wash, chlorate of potash, nitrate of silver, sulphate of copper or of zinc. The remedies must often be continued for months without interruption, and when the factor has been absent four to six weeks the severity of the treatment may be relaxed. Relapses must be expected at the catamenial periods, and on the occurrence of catarrhs. Internally, Ol. Morr., given for a long time, is often useful. Tinc. Iodinii, $\mathfrak{m}\nu$ — \mathfrak{xv} , at meal times, and arsenic appear to be beneficial. In syphilitic ozæna mercury and Pot. Iod. are necessary.

MACKENZIE, M., M.D. Lond.—*On Functional Aphonia*. Med. T. and Gaz., Feb. 21st; *vide* also Brit. Med. Jour., Sept. 19th.

Mackenzie reports two cases from among others treated successfully by the direct application of galvanism to the larynx. Both patients had previously been subjected to a variety of treatment, including the local application of nitrate of silver, and galvanism externally, but without any advantage. The probang is so contrived that the current does not pass through it until a spring is touched, which completes the connection. Mackenzie states that none of the patients who have come under his observation have been of the hysterical temperament, or shown any of the common and acknowledged phenomena of that disease. The method pursued has been to place one sponge externally over the thyroid, and to apply the others to both vocal cords, and also to the posterior surface of the arytenoid cartilages.

JOHNSON, G., M.D.—Med. T. and Gaz., June 6th.

Recommends for the practice of laryngoscopy that the concave reflector should be placed on the forehead, and not in front of one eye. This is very commonly done in Paris. It has the advantage of allowing the free use of both eyes, and of making it much easier to direct the light into the patient's throat, and to practise any other requisite manipulation. The eyes are also better shaded from the direct light of the lamp or of the sun, and a more free movement of the reflector in all directions is obtained. Inhaling a little chloroform has proved useful in subduing the reflex sensibility of the fauces.

MORRELL, MACKENZIE, M.D.—Med. T. and Gaz., Aug. 8th.

Describes an instrument for supporting the laryngoscope mirror after its introduction into the fauces. The instrument (termed a self-holder) is very easily applied, and easily borne, and is very portable. It consists of a thin plate, which is put into the patient's mouth so as to be on a level with the upper teeth; on the under surface of the plate is a slight projecting ledge, on which the stem of the mirror, after its introduction into the fauces, can easily be made to rest. The plate is kept in its place

by means of a spring, which passes round the head, and, through the intervention of a rather broad pad, presses just below the occipital protuberance. By means of this arrangement, the hands are left free for making topical applications.

MERKEL, L.—*Report on recent Contributions to Laryngoscopy*. Schmidt's Jahrb., vol. 119, p. 313.

Thirty-four papers are cited in this collection, some of which have been noticed on former occasions. A variety of instruments are described which have been invented for different purposes, as fixing the laryngeal mirror, the tongue, or the soft palate, raising the epiglottis, &c. Various proceedings respecting local treatment are noticed, of which we need only mention Fournié's plan for inhaling finely pulverized substances, such as alum, tannin, acetate of lead, nitrate of silver. He uses a box provided with two glass tubes, through one of which the patient inspires forcibly, while the other passes down to a saucer containing the medicated powder, which is placed at the bottom of the box. Examination with the laryngoscope shows that the dust which is raised by the current of the air enters the larynx. Semeleder's remarks on rhinoscopy are given at some length. Under the head of pathology and treatment we have some observations by Lewin respecting the epiglottis, the posterior wall of the larynx, and the arytenoid processes. He shows that the epiglottis is raised when a high note is sounded, and depressed when the reverse is the case; if it is much depressed, the tone is muffled. When one endeavours to give to the letter *a* during phonation a deep, hollow timbre, the epiglottis recedes from the anterior angle of the glottis as far as possible, its free border arches itself to a convexity directed towards the glottis, so that in this way a vault is formed over the laryngeal part of the pharynx (fangrohr). The vocal undulations are thus thrown back by the epiglottis, and do not freely reach the buccal cavity, as they do when the epiglottis is vertical. The formation of these deep sounds, if they are prolonged for any length of time, is a laborious effort, because the concave curvature of the epiglottis is produced by very thin muscular fasciculi lying in the aryteno-epiglottic fold. Persons, especially preachers, who are compelled by their calling to make often such exertions of their voice, are liable to suffer from morbid affections of the parts concerned. Lewin found in such preachers a remarkably great lowering of the free part of the epiglottis, and a considerable thickening of the aryteno-epiglottic ligaments, as the cause of this altered position. Without the size of the epiglottis having at all increased, its anterior part was often so much lowered that even during the utterance of high tones it was not materially raised, and had assumed the shape of a bowl, while the aryteno-epiglottic folds were considerably thickened and of a livid colour, and the vocal cords were swollen and red. Follicular enlargements and small ulcerations were found at the anterior attachment of the aryteno-epiglottic folds and in other parts also. Elevation of the epiglottis by artificial means diminished the hoarseness, and the use of local remedies which rendered it more movable had the same effect. The mucous membrane of the posterior wall of the larynx is poor in elastic fibre, but contains numerous grape-like glands projecting from its deep surface. During

the movements of the arytenoid cartilages this membrane is alternately thrown into folds and stretched, the excitement of which disposes these glands to excessive secretion. This, again, when there exists a tendency to tuberculous deposit, leads to the formation of funnel-shaped ulcers, and in such circumstances a simple erosion by becoming infected with tuberculous or syphilitic pus may change into a specific ulcer. New growths do occasionally occur in this situation, but are rare. On the other hand, swelling and thickening of the mucous membrane are common, especially in officers, who have often to give words of command. The relaxed membrane gets between the vocal cords and arytenoid processes, and appears often, when the glottis is open, as a pea-shaped swelling. The voice is rather but not remarkably hoarse; the principal complaint of such patients is that they experience an unpleasant tickling in the larynx, which easily induces coughing. Generally, disease of the mucous membrane between the two arytenoid cartilages produces spasmodic reflex phenomena, whose import has hitherto been mistaken, as difficulty of swallowing, vomiting, and spasm of the glottis. Lewin next remarks on changes taking place in the vocal process of the arytenoid cartilage. The yellow spot in which the elastic fibres of the vocal cord pass through fibro-cartilage into the hyaline substance of the arytenoid, and which, in all vocal actions, is chiefly exposed to pressure, is in phthisical persons very much disposed to the formation of small ulcers, which penetrate to the fibro-cartilage, and denude the vocal process on its inner side, and destroy it; especially when, as often occurs in the tuberculous dyscrasia, the extremity of the vocal process is converted into a sharp, bony point. The ulcers creep forwards along the vocal cords, and penetrate more deeply at their anterior commissure, where there are numerous glands. With regard to catarrhal laryngitis, Türck affirms that it may be limited to the epiglottis, or to the membrane covering the arytenoid cartilages. In the latter case, when there is much swelling, the glottis cannot be completely closed. The superior vocal cords may be inflamed on both or on one side only; when highly inflamed, they appear as red rolls, covering over the vocal cords, closing the ventricles, and impairing the vibration of the lower cords. The latter may be reddened in streaks, or more or less completely; sometimes they are also swollen, and form a reddish ridge projecting at its internal border, or develop a small round tumour, or they may appear as if their surface had been cauterized, and their epithelium had separated. A distended vein is often seen running parallel to their inner free borders. In two instances Lewin observed an actual specific inflammation of the vocal cords, such that they appeared, as it were, saturated with blood, while the symptoms appeared to be those of croup. There is nothing characteristic in the cough, when the vocal cords are inflamed. Hoarseness almost constantly occurs, but may have disappeared when one cord still remains red and swollen. The glottis is sometimes contracted by the swelling of the vocal cords and of the mucous membrane lining the posterior wall of the larynx. The duration of laryngeal catarrh varies from weeks to months; when very intense, the inflammation may lead to the formation of ulcers, which, however, generally heal without loss of substance. Laryngeal catarrh may be chronic from its commencement, and almost limited to the vocal cords; and then

without giving rise to cough or pain, may cause abiding hoarseness, which interferes materially with singing. In chronic catarrhs the colour of the cords varies considerably; they become thickened and cord-like and develop granulations and (warty) growths, very similar to those which are formed in syphilis. Catarrh, symptomatic of syphilis or tubercle, may leave after its subsidence cicatricial degeneration of the mucous membrane and the submucous tissue. In the treatment of aphonia depending on chronic laryngitis, with swelling of the vocal cords, as well as of that which results from mere nervous depression, Mascarel recommends the use of the thermal springs of Mont Dore. These waters are stated to exert a special modifying or substitutive action on the mucous membrane of the throat and air-passages, including the bronchi. They are effectual even when the ventricles of the larynx are dilated, and its intrinsic muscles are paralysed. Gerhardt ('Wurzb. Med. Ztschr.,' iii, i, p. 10, 1862) directs attention to a cause of hoarseness, which hitherto has been almost overlooked. This is catarrhal swelling of the inter-arytenoid fold of mucous membrane, which prevents the juxtaposition of the arytenoid cartilages requisite when the glottis is closed for the formation of sound. This swelling is formed mostly in acute, sometimes also in chronic catarrhs. It is evident even during the quiescent condition; but during phonation it applies itself to the inner surface of both vocal cartilages, so that the glottis, which in the rest of its extent is closed, so as to appear like a line, presents posteriorly a triangular open fissure. Other causes, such as condylomata, ulcers, cicatrices, &c., may in the same way prevent the due apposition of the vocal cords, and allow the greater part of the air to escape without producing sound. Gerhardt believes that many aphonias of short duration which are usually ascribed to paralysis of the vocal cords arise in this way. He finds caustic applications most successful when violent muscular and secretory reaction ensue. Türck says that in phthisical patients, besides actual tubercular ulcers, simple catarrhal and follicular occur, the latter especially on the posterior surface of the epiglottis, where follicles abound, and on the anterior surface of the upper division of the posterior wall of the larynx. These laryngeal ulcers are situated mostly at the lower portion of the posterior surface of the epiglottis; they seldom perforate it except at the borders, which then appear as if eaten away. As a rule, the contour of the organ is preserved, and in this respect tuberculous ulcers differ remarkably from the syphilitic, leprous, and cancerous. These ulcers of the posterior surface of the epiglottis give rise to but few subjective symptoms. Ulcers of the vocal cords are less characteristic; they consist either in excoriations, when the cords, in a great part of their extent, present a grayish-yellow colour, are deficient in their normal brilliancy, and show a superficial depression at the diseased part; or they are larger and more extensive, and show irregular and even undermined borders. Even when the ulcers are large the voice is only hoarse, not lost. Sometimes the superior vocal cords ulcerate in circumscribed spots, without the lower being involved; sometimes the morbid action extends by continuity of tissue through the ventricle. Ulcers are very frequent on the mucous membrane covering the transverse arytenoid muscle, and are often characteristic of latent pulmonary tuberculosis. They are best seen when the patient's head is held upright, and

present a serrated border. They are often associated with ulcers on the epiglottis, vocal cords, and posterior internal part of the larynx. Lewin ('*Med. Centr. Zt.*,' xxx, 82, 1861) affirms that ulcerations of the postero-internal wall of the larynx are of the greatest value in forming a diagnosis between syphilis and phthisis, even when auscultation and percussion leave us in doubt. Both pain and hoarseness may be absent, and therefore laryngoscopy is never to be omitted when there is any suspicion of tuberculosis or syphilis, and the diagnosis is at all uncertain. Lewin states that he has never been deceived in any diagnosis founded on laryngoscopic examination. Loss of the arytenoid cartilages, one or both, from necrosis, produces aphonia and defective closure of the glottis, with difficulty of expectoration. We then observe that the posterior wall of the larynx has fallen in, especially when one cartilage only is lost; that there is a want of the usual phonatory movements, which is most remarkable in the case just mentioned, but becomes less so when the mucous membrane in this situation is much swollen or indurated; and, lastly, in some cases large, deep, ulcerated excavations may be seen at the posterior part of both upper and lower vocal cords. Syphilitic ulcers of the larynx, according to Türk, are mostly situated on the epiglottis; when they last long they penetrate deeply, and perforate, or even destroy, the cartilage more or less completely. The ulcers are surrounded with a red area, and their margins are mostly swollen, by which, as well as by the depression of the epiglottis, the view into the larynx is impeded. They do not occasion, generally, much dysphagia. Ulcers also occur on the vocal cords (upper and lower), the aryteno-epiglottic folds, or the posterior wall of the larynx. When shallow, they heal without leaving recognisable cicatrices, but when deep they cause distortions of the vocal cords, stenosis, and adhesions at the anterior angle of the glottis. The pharynx is rarely free when the larynx is attacked. Quasi-condylomatous growths from the mucous membrane are also the result of syphilis. Türk mentions a case in which these grew on both arytenoid cartilages and one of the upper vocal cords, and were so large as to cover the inferior cords, yet disappeared completely by mercurial inunction. Balassa records two cases of œdema of the glottis, one the result of hereditary syphilis, the other consecutive to typhus. In the first there was considerable swelling of the epiglottis and extensive ulceration, in the second serous submucous effusion of the epiglottis, the vocal cords, and the aryteno-epiglottic folds. In both tracheotomy had to be performed. Heyer reports the case of a semi-idiotic boy, æt. 8, whose speech was extremely imperfect, but suddenly improved to a very great extent after the administration of a cold douche while he was in a warm bath. The improvement was permanent. Lente records two cases in which aphonia ceased permanently after inhalation of chloroform or ether to anæsthesia. Türk distinguishes different paralytic affections of the muscles of the glottis—(1) Phonic paralysis of the constrictors.—Either the whole glottis may remain open and gaping during attempts at phonation, or only a part, viz., the anterior or ligamentous glottis. During swallowing, however, the glottis is completely closed, and dilatation also is properly performed. This paralysis is always bilateral. Its causes are catarrh, tuberculosis, and typhus. Treatment consists in stimulation by galvanism, caustics, &c., but in one case

recorded by Türck which had lasted nearly five years, and where the patient was amenorrhœal and suffered from dyspnœa venesection to 1 lb. procured speedy recovery. (2) General paralysis of the constrictors.—In this case not only the phonic, but also the other movements of the glottis, are more or less abolished. The paralysis is almost always bilateral. (3) Permanent unilateral contraction of the glottis is where one vocal cord approaches more or less closely to the median line, while the apex of the arytenoid of the same side appears very prominent, and often projects beyond the median line. In phonation and coughing the vocal cord remains almost immovable, the voice is weakened, the cough not strongly marked. Here the crico-arytenoid post. of the corresponding side is paralysed, and generally also some fasciculi of the contractors. Rheumatism, catarrh, and cancer of the air-tubes are mentioned as the causes of this affection. The symptoms of new growths in the larynx are—(1) *Hoarseness*, which depends more on the situation of the tumour than on its size. Small growths may produce it if they interfere with the action of the vocal cords; large ones may not, if they leave these important parts free. (2) *Cough*, which is also very dependent on the seat of the growth; it is generally intermittent and convulsive. (3) *Dyspnœa*, which also is seldom continuous, and which is most experienced in in- or ex-piration, according as the obstruction is seated above or below the glottis; peculiar respiratory murmurs are in some cases to be heard. (4) Uneasy sensations in the neck, specially in the larynx, as if mucus was sticking at some part; sometimes these are the sole indications. The importance of detecting these morbid formations is very apparent, from the circumstance that such patients have been regarded as syphilitic or phthisical, and in consequence have undergone a great variety of useless treatment, with much trouble, pain, and expense. On the epiglottis the new growths are almost always situated, either on its base or on its postero-inferior surface. The best means of getting a view of the posterior surface of the epiglottis with the aryteno-epiglottic ligaments and vocal cords is to get the patient to utter a high falsetto note. New growths are sometimes developed in the ventricles, and push the superior vocal cord upwards, and the lower downwards. Until they protrude from the orifice they are, of course, invisible. Lewin cites 33 cases of new growths situated on the inferior vocal cords; of which 8 occupied both, 7 the left, 16 the right cord. As to their nature, 18 were polypi, 5 epithelial growths, 3 fibro-plastic tumours, 3 canceroid, 1 encephaloid, 1 a syphilitic excrescence. The frequent occurrence of growths in this situation is accounted for, according to Lewin, by the peculiar combination in this part of pavement epithelium with elastic and muscular tissue. On the false vocal cords growths are more rare, as well as on the arytenoid cartilages. On the anterior wall of the larynx growths occur much more frequently than on the posterior, which is a favorite seat of ulcers. In the lower parts of the larynx and in the trachea growths of various sorts are not uncommon. The rest of the report is chiefly taken up with a description of the various instruments and proceedings employed for the removal of growths from the larynx, and with the records of numerous cases. For some notice of these *v. Year-book for 1863*, p. 119. A notice of some cases examined rhinoscopically closes the report.

SANDERSON, J. B.—*On Asthma*. Med. Tim. and Gaz., May 16th.

Sanderson regards as the characteristic elements of asthmatic dyspnoea—(1) Excessive expansion of the chest. (2) Resisted but forcible efforts to expire. (3) Diminution of the exchange of air in the chest, and consequent venous condition of the blood. In the asthmatic state the chest is arched forwards in extreme inspiration, the diaphragm sinks below its normal level, so that its power is lost, while the almost fruitless efforts to renew the air in the chest are accomplished by elevation of the upper ribs. The expiratory muscles of the abdominal wall are in excessive action, but, in spite of their efforts, air is expelled from the chest with extreme difficulty and in small quantity. The condition of blood which is thus produced gives rise to the sensation of want of breath, and compels the patient to make conscious and voluntary efforts to get rid of the used air, which is, as it were, locked up in his chest. Sanderson explains the development of this state by remarking that during the most profound sleep (when asthma mostly supervenes) the muscles which open the glottis become more relaxed, and the aperture is therefore narrower, so that expiration becomes more difficult. As the laryngeal resistance is normally greater to the egress than to the ingress of air, the chest falls more and more with each respiration, the inspiratory power of the diaphragm lessens, the exchange of air is diminished, the blood becomes less arterial, and thus, without any agency beyond the intensification of that condition of respiration which exists in natural sleep, all the elements of asthma are developed. Asthma may thus be traced to disorder of the respiratory function of the glottis. As, however, the same nerve supplies the muscles of the glottis and the contractile fibre of the lung-tissue, it is highly probable that both are in a similar state of relaxation. The above view accords perfectly with what is known as to the intimate relation of asthma and emphysema. Emphysema is rather the consequence than the cause of asthma; it results from resisted but powerful efforts on the part of the expiratory muscles to expel air from an expanded lung. This is precisely the state of things in asthma. But the relation between the disease and the lesion is rather that of community of cause than of consequence. Temporary over-expansion of the lung is a constituent of asthma; permanent expansion cannot exist without emphysema. During the attack of asthma stimulants are most useful.

SANDHAHL, O. TH.—*On the Effects of Condensed Air on the Human Organism, in its Physiological and Therapeutical Relations*. Schmidt's Jahrb., vol. 120, p. 173.

We refer to this paper, which is too long for our limits, especially with reference to the fatal cases recorded as having occurred from working in compressed air in Ireland (v. p. 88.) The method is said to have been more or less successful in acute and chronic laryngitis, in tracheal catarrh, and acute and chronic bronchitis, in croupous and capillary bronchitis, chronic pneumonia, emphysema and asthma, pulmonary tuberculosis, pertussis, summer catarrh, pulmonary atelectasis, anaemia, chlorosis, and struma, and deafness depending on obstruction of the Eustachian tube. Establishments for administration of baths of condensed air are said to exist at Lyons, Montpellier, Nizza, Paris, London, and at Johannisberg.

HYDE SALTER, M.D.—*Lancet*, Nov. 14th.

Records of three cases of extremely severe asthma, in which very great relief was obtained during the paroxysm by full doses of alcoholic liquor, brandy, whiskey, gin. The stimulant is to be taken with a little very hot water, the hotter apparently the better. If taken cold, it does no good. Its continued use requires that the dose should be constantly increased, in order to produce the same effect. Intoxication is not necessary to the beneficial effect. In the recorded cases all other means had been used fruitlessly.

ABBOTTS SMITH, W., M.D.—*Med. Tim. and Gaz.*, Nov. 21st.

Relates a case of hay fever, and suggests that it is occasioned by benzoic acid being given off in emanations from the *Anthoxanthum odoratum*, and the *Holcus odoratus* during hot weather. Cold bathing, ice internally (allowed to dissolve in the mouth), lobelia, and quinine with sulphuric acid, are the best remedies.

HJALTIELIN, J., M.D.—*On the Epidemic Influenzas of Iceland, especially the last one of 1862.* *Edin. Med. Jour.*, Feb., 1863.

Hjaltelin says that it often happens that this disorder arrives in Iceland a year later than it does on the Continent of Europe. The epidemic of 1862 was preceded by a dry, thick, ill-smelling fog, and prodigious swarms of flies. Great apathy was a marked symptom. The fever had a marked type, subsiding in the morning and aggravated in the evening, followed by restlessness and neuralgic pains, especially lumbago, otalgia, odontalgia, neuralgia intercostalis and facialis, and hemicrania. All the mucous membranes of the body were, in the more severe cases, in an evident hyperæmic state. That of the urinary organs he notices as being especially involved, and so also was often that of the intestinal canal. Serous effusions in the pleuræ and pericardium were extremely common, and occurred when there was no clear sign of previous inflammation. Hjaltelin believes the disease to be both contagious and the result of atmospheric miasm. He recommends quinine as a preservative, and veratria as a remedy in the disorder, besides other antiecatarrhal remedies.

EASTON, J. H., M.D.—*On the Use of so-called Expectorants in Disease of the Mucous Membrane of the Lungs.* *Glasgow Med. Journ.*, Oct., 1863.

Easton criticises the views of Dr. Gairdner, and states—(1) That as in the early stage of bronchitis the membrane is inflamed and dry, and there is nothing to be expectorated, the remedies which are employed cannot be called expectorants; they ought rather to be termed relaxing broncho-muco-alterants. (2) That as in chronic bronchitis the system is often in an atonic state, and the mucous membrane of the lungs is always so, the indication is to invigorate by agents which might be termed stimulating broncho-muco-alterants. (3) That to excite the muscles to healthy contraction which perform the necessary act of coughing, various stimulants should be used, which may be termed pneumo-musculo-excitants.

GRIEPENKERL.—*On the Treatment of Hooping-cough by Ergot of Rye.* *Deutsche Klinik.* *Edin. Med. Journ.*, Dec., 1863.

Griepenkerl boils gr. xx—xxx of coarsely powdered ergot for half an hour with ʒj of isinglass, and adds ʒiiss of white sugar. Of this mixture he gives ʒj 2dis horis to a child aged five to seven years. For younger children the quantity of ergot is to be gr. x—xv. During the treatment no articles of food containing tannin are to be taken. The remedy is not to be given until the beginning of the third week of the disease, and after all complications have been got rid of. The paroxysms are often aggravated at first, but diminish in five or ten days.

ROGER.—*Practical Remarks on Pertussis.* Journ. Méd. et de Chir. pratiqu., vol. xxxiv., p. 24.

Roger advises that infants should be kept, if possible, from being exposed to the infection. Occasional ipecacuan emetics, belladonna, and coffee, are the remedies he finds valuable. Coffee does not diminish the attacks, but only the vomitings which succeed them. Inunction with belladonna ointment in the axillæ, and inhalation of ether are also serviceable. Change of air is not advisable except in the decline of the disease.

GIBB; HARLEY.—*Lancet*, Sept. 26th.

Relate several cases of pertussis treated very advantageously by bromide of ammonium. The dose is gr. ij—iij ter die for infants; for older children, from gr. iv to gr. viij or x. It seems to influence the special nervous symptoms more than the catarrhal. If there be a tendency to bronchitis or pneumonia, it should be combined with Vin. Ipecac.

LEARED, A.—*The Use of Arsenic in Phthisis.* Med. T. and Gaz., Jan. 17th.

From its singular power under certain circumstances of restoring health, Leared was induced to try the remedy in phthisis. He gives a brief report of 9 cases, in 4 of which cough and expectoration were improved in 3, pains of chest removed in 1, night sweats were arrested in 2, flushing of the face much relieved in 1, and appetite greatly increased in 1.

COTTON, R. P.—*Med. T. and Gaz.*, Jan. 24th.

States that he gave to 25 patients in the Brompton Hospital (8 males and 17 females) Tinc. Ferri Muriatis mx—xv ter die for periods varying from three weeks to four months. Ol. Morr. was only given occasionally. The results were that 12 patients improved greatly, 5 slightly, and 8 not at all. Ten of the 17 more or less improved cases did not take any cod-liver oil; but by subsequent observations it was sufficiently evident that the greatest good was brought about by the combined influence of these two substances.

SMITH, EDWARD, M.D., F.R.S.—*A Statistical Inquiry into the prevalence of numerous conditions affecting the Constitution in 1000 Phthisical Persons when in Health.* Dublin Q. J., Feb., 1863.

The ages of the patients at the period of inquiry gave an average of 29·66 years for the males and 27·5 years for the females. It was found that 44 per cent. of the whole were between 20 and 30, about one eighth were under 20 years, and 3 per cent. were above 50 years. As to the place of birth 30 per cent. were born in London or its denser suburbs, and 65 per cent.

in other parts of England. As to the place of residence, 36 per cent. had lived in London during the greater part of their lives, 51 per cent. in the country, and 7 per cent. in various places; but during the last three years 53 per cent. had lived in London and 40 per cent. in the country. As to education, all with the exception of 8·8 per cent. could both read and write, and only 14·3 per cent. had been badly nourished at any period of their lives. As to the parents of the patients, it appeared that the average age of the patients being 28·8 years, 54 per cent. had lost the father, 46 per cent. the mother, and 28 per cent. had lost both parents. In 25 per cent. both parents were living. The average duration of life of the parents who had died was—mothers 48·2 years, fathers 52·9 years. In the period preceding the patients' birth, 18 per cent. of one of the parents had had feeble health, and of that number the greater proportion, viz., 11 per cent., were the mothers. Both parents were similarly affected in 2 per cent. When the whole course of life was included, the proportion increased, so that it became 34 per cent., and still the mothers exhibited a preponderance of 8 per cent. over the fathers. Both parents were feeble in 4·3 per cent. In 23 per cent. one or both of the parents had been generally unsteady, mostly the males. Of the parents, one or both had died from consumption in 21 per cent.; brothers or sisters in 23·3 per cent.; parents, brothers, or sisters, in 36 per cent.; grand-parents in 2·8 per cent. In every instance the mortality amongst the relatives of females was greater than in those of males; and in reference to the immediate relatives—parents, brothers, and sisters combined—the excess was 19 per cent. The proportion of presumed scrofulous disease, with the exception of the continuance of enlarged glands in 5 per cent. of the cases, was utterly insignificant. In only 8 per cent. were there any evidences known of the existence of that class of diseases. Rheumatism and asthma were the most prevalent diseases (22·6 and 13·3 per cent.); liver diseases and gout were next in order of frequency (9·2 and 7·2 per cent.); ague and typhus fever had each occurred in nearly 5 per cent. of the cases, insanity in 4·3, and cancer in 3·2 per cent., while brain and kidney affections and diabetes had been still less frequent. In only six instances, or ·6 per cent., had the parents been related before their marriage. At the time of the patients' birth 81 per cent. of the parents were between the ages of 20 and 40. Only 2·8 per cent. were under 20 years, and in about 2 per cent. the age was from 55 to 70 years. As to the number of children in each family, it appeared that families with 6, 7, and 8 children were the most frequent; in only 3 per cent. was there but 1 child, and families with 3 children or less formed only 15·4 per cent. of the whole. Families having from 5 to 10 children constituted 56 per cent. of the whole. The average number of children to a family was 7·5. At the time of the inquiry 40 per cent. of the parents' children had died. As to the order of birth of the patients among the parents' children, 20 per cent. of the whole were first children, and from that there was an unbroken line of diminution to those who were the tenth children. Those who were first, second, and third children constituted one half of the whole number. The following statements regard the patients only. As to the colour of the hair, it was found that the females presented an excess in the medium and dark shades, while the light

colours were twice as frequent in males as in females. As to the eyes, the proportion of black was quite insignificant; the gray shades embraced 74 per cent.; the brown colour was more, and the gray colour less, frequent in females than in males. The florid complexion was met with in nearly 60 per cent., and the pale in 40 per cent. The florid was more frequent in the females. As to bodily conformation, about an equal number of all the patients were fleshy and spare; the females, however, much exceeded the males in the fleshy class, and *vice versd*. The extremities were apt to be cold in rather more than half the cases, mostly among the females. The susceptible temperament prevailed largely; it was found in 72·5 per cent. of the cases, in 74·5 per cent. of the females, and in 68·5 per cent. of the males. As the appearance of the catamenia, 63 per cent. of the whole had the menstrual epoch at 13, 14, 15, or 16 years of age. As to irregularity, in only 6 per cent. was there an excessive quantity, in 29 per cent. it was deficient, and 16·7 the returns were infrequent. Leucorrhœa had been persistent in 42·2 per cent. of all the cases. As to discharges of blood, epistaxial and hæmorrhoidal, the latter were rare, the former rather frequent. There were 43·5 per cent. married, and of these 13 per cent. were childless. Four fifths of the whole had their first child when between 20 and 30 years of age. The number of children was not large per each family; those with 1 and 2 constituted 44 per cent., those with 3 and 4 gave 20·8 per cent., those with 5, 6, and 7 were 21·8 per cent. As to the general health of the children, it was feeble in 43 per cent. of all the cases, and in a higher ratio among females than males. Abortion had occurred in 46·2 per cent. of the child-bearing females. Of the male patients, nearly one half smoked, one fourth had drunk to excess, and 29·6 per cent. had led a bad life in various ways at some period, mostly before 20. Syphilis and gonorrhœa had occurred in 27·5 and 50 per cent. of the cases. Late hours had been kept in 19·3 per cent. of the whole cases, and four times oftener in men than in women. Anxiety to an injurious degree had been experienced in 22·2 per cent.; 70 per cent. complained of some injury resulting from their occupation, the males to the amount of 85, the females to 49 per cent. The most frequent source of injury was exposure, after which closely came long hours and close and hot rooms. In 9 per cent. mercury had been inhaled or imbibed so as to cause injury, twice as often among males as in females. General bleeding had been practised in 15 per cent. of the cases, much more frequently in females. Flannel had not been worn usually by 25 per cent. Only 2·5 per cent. had been dry-nursed; in 24 per cent. the patients had been born of feeble habit, females in a ratio of 5 per cent. higher than males. Good general health during the periods of childhood, puberty, and adolescence, had been experienced by 78·5 per cent., whilst 7·5 per cent. had never enjoyed it. Good health was 20 per cent. more common in males, and unbroken feeble health 7 per cent. more frequent in females. The appetite had been generally good in 83 per cent. of the cases, with an excess in favour of the males of 18 per cent. It had never been good in 7 per cent., with a large excess on the part of the females. The lungs were considered to be naturally delicate in 12·6 per cent. of the cases, women being more liable to it than men in the proportion of 17 : 9·6. Hæmoptysis, considering the smallest streak as such, occurred in 32·2 per

cent. in women, and in 33 per cent. in men. As to previous diseases, 16 per cent. of the cases had not had measles, 65.4 per cent. had not had scarlet fever, 60 per cent. had not had smallpox, and 41 per cent. had not had hooping-cough. In each of the four diseases the greatest number of cases occurred between 2 and 5 years of age, and the proportion was, hooping-cough 38.8, measles 31.2, smallpox 24.7, and scarlet fever 22.3 per cent. No recognised ill effect ensued from these diseases that is worth much notice; in particular, they do not seem to have produced general debility. As to presumed scrofulous and allied diseases, some member of this class had been present in 21 per cent., and of that 12.8 per cent. alone were enlargement of the glands, and 4.5 per cent. long-continued disease of the eyes; and hence the affections of the ears, bones, and joints, marasmus, and peaked chest, were too infrequent to assume any importance. No case of rickets was found in the 600 males. Of other diseases it was found that no instance of insanity or diabetes occurred among the 1000 patients; that the most prevalent diseases were inflammation of the lungs and rheumatism or rheumatic fever, the former of which had occurred at some period of life in 16.7, and the latter in 14.8 per cent. After these came fever, chiefly typhus, and frequent diarrhoea, each of which occurred in about 8 per cent. Ague had occurred in 5.6, and liver affections in 4.3 per cent., fits in 2.8 per cent. Dysentery, kidney affections, brain disease, gout, and cancer, were none of them above 1 per cent. The general result of Dr. Smith's investigation leads him to support Prof. Walshe's statement, that "phthisis in the adult hospital population of this country is, to a slight amount only, a disease demonstrably derived from the parents." He affirms that phthisis is not necessarily nor usually a disease directly transmitted from the parent to the offspring, but that in a large proportion of phthisical patients the parents, brothers, and sisters, had experienced feeble health and a somewhat lessened duration of life. There was not, however, a majority of the cases so connected. His investigations indicate clearly a considerable preponderance of unfavorable circumstances on the side of the females, and show how great is the mother's influence upon the health of the children. He concludes that, while there is much evidence to show that the disease is frequently allied with a state of system defective in vital power and resistance, both of the patient and his parents and his children, yet that the large proportion in which none of those states of health could be discovered is sound proof that phthisical patients are a mixed class, and that the disease arises under very diverse conditions.

GINTRAC, II.—*On the Dimensions of the Chest in Pulmonary Phthisis.*
Arch. d. Méd., Nov., 1862. Brit. and For. Med.-Ch. Rev., Jan., 1863.

The author bases his observations upon the ascertained dimensions of the chest in 140 healthy people and 80 consumptive ones, whom he arranges in three classes, according to age. Each of these classes he again subdivides into two groups, according to the periods of "crudity" or softening of the tubercle. The following are his conclusions:—(1) The chests of phthisical patients are less in circumference than those of the healthy. (2) This diminution in the size of the chest, appreciable from

the commencement of the tuberculization, increases in proportion to the progress of the disease; it may reach in the second period ten centimètres for the upper circumference, eight for the mammary, and six for the lower. (3) The upper circumference of the chest, with but few exceptions, is very much larger than the mammary and lower ones in all the periods of the tubercular affection. (4) The interval between the two nipples in man gives an exact idea of the size of the thorax; it represents the quarter of the mammary circumference; in the adult it measures 29 centimètres in the normal condition; 19 in the earlier period of phthisis, and 17 in the second. (5) The measurement of the inter-mammary space deserves attention, and should be an element of diagnosis in the appreciation of any tendency to pulmonary phthisis. The author lays stress on hygiene and special gymnastics of the respiratory organs as essential elements of the prophylactic treatment of phthisis. Efforts of inspiration and exercise of the upper limbs should be resorted to for the dilatation of the chest.

MILLET, AUG.—*On the danger of employing Ferruginous Preparations at the commencement of Phthisis.* Bull. Gén. de Thérap., June 15th, 1862. Brit. and For. Med.-Ch. Rev., Jan.

Millet is of opinion that the anæmia, which is one of the precursory phenomena of phthisis in certain young women, is only temporarily benefited by the administration of iron, which fearfully accelerates the progress of the tuberculous degeneration.

COTTON, R. P.—Med. Times and Gaz., May 30th.

States, with regard to the use of dilute phosphoric acid in phthisis—(1) That it acts beneficially as a tonic in certain instances, but that as a general rule it is inferior to some of the other mineral acids. (2) That when taken in conjunction with iron its good effects appear to be considerably enhanced. Of twenty-five cases, three were much benefited, and eight a little, and fourteen derived no benefit from taking the drug.

LEARED, A., M.D.—*On the Treatment of Phthisis by the Hot-air Bath.* Lancet, Nov. 21st, Dec. 5th.

Leared records three cases, in all of which the bath appears to have been highly beneficial. In two of them the disease was very serious. Coughs, dyspnœa, and night sweats, were decidedly relieved by the bath. Hæmoptysis was never induced by it. No debility was produced by the bath, but its effect was rather comforting and sustaining. Leared thinks that the hot-air bath and cold plunge in a great measure supply the deficiencies of climate, by rendering patients more tolerant of our own changeable seasons.

LEUDET.—*On the use of Acetate of Lead in Pneumonia.* Bullet. Génér. de Thérapeut., Nov. 15th, 1862. Brit. Med. Jour., Jan. 17th.

The remedy was given in forty cases (thirty-one males and nine females), of whom three died. The disease was unilateral in all but one. The mean age of the patients was $36\frac{1}{2}$ years. The duration of the use of the medicine varied from one to fifteen days, the average being six. The total

quantity administered varied in different subjects from 7 to 80 grains, the average amount was about 40 grains. No signs of poisoning were produced, nor any blue line; neither was there constipation, but, instead, diarrhœa in half the cases. The effect on the pulse was to diminish the number of pulsations from 100 or 120 down to 70, 60, and even 50 or 40 on the fourth day after commencing treatment. In one-half the cases returning crepitant rhonchus was heard after the first day of treatment. In nine cases out of thirty the stethoscopic signs remained stationary for two or three days, when resolution commenced. In six cases out of thirty the symptoms increased in intensity after the treatment was commenced, but this continued only one day in five cases and two days in another. Convalescence was rapid.

BOUCHUT.—*On Chronic Congestion of the Lungs simulating Early Phthisis.* Jour. de Méd. et de Chir. pratiq., Sept., 1863, p. 392.

Bouchut states that the diagnosis of the two states is often very difficult, but that we possess a touchstone of discrimination in the effects of cold and warm sulphurous springs, aided by a residence in the country. These have the best results in mere pulmonary congestion, but are useless in actual phthisis. The actual condition of the lung is one of partial collapse and hyperæmia, in consequence of which it does not receive the usual amount of air, and passes into a sub-inflammatory induration. The disorder is an asthenic affection, often connected with struma or the herpetic diathesis, and requires to be combated by tonics and stimulants.

SKODA.—*On the Treatment of Pulmonary Inflammation.* Allg. Wien. Med. Ztg., viii, 5, 6, 1863. Schmidt's Jahrb., vol. 119, p. 34.

Skoda believes that we can have no certainty as to whether pneumonia is commencing, and has no faith in the possibility of arresting it in a very early stage. Even when the disease has declared itself we have no sure guide in each individual case to a successful treatment. Observations, made several years ago, as to the results obtained when pneumonia was treated by different methods, showed that where venesection was employed the rate of mortality was most unfavorable, and the reverse where it was quite put aside. For six years subsequently Skoda has experimented in the treatment of pneumonia. He does not find now that abstinence from bloodletting gives a favorable rate of mortality. The general result of his experience is that the rate of mortality may accidentally take a very favorable form during a certain interval under each of the different modes of treatment, and again may assume a very unfavorable form, though no reason for the change can be discovered. Certainly the existing epidemic tendency has nothing to do with it. From his numerical researches Skoda comes to the conclusion that treatment exerts no remarkable influence on the rate of mortality on a large scale. There is no specific for pneumonia, but the sufferings of the patients can be alleviated, and some troublesome and life-perilling symptoms can be removed. Venesection is only advisable when peculiar symptoms are present, either such as by their severity threaten life or are capable of being lessened by it. Such are delirium, sopor, convulsions from arrest of the circulation in the cervical veins, impending asphyxia from copious sanguineous secretion in

the bronchi or from rapid extension of the infiltration. Tartar-emetic affords no relief unless it produces vomiting or diarrhoea. Calomel is not advisable, nor has digitalis produced good results in Skoda's hands. Opium is useful as a palliative in the case of those patients who bear it well, and in them it may be continued for some length of time. Quinine is beneficial in pneumonia associated with intermittent fever, and also in dyspnœa, where the action of the heart is irregular, rapid, and ineffectual, owing to exhaustion of the nerve-power. Inhalation of ether or chloroform affords momentary relief. Warm external applications give relief to many pneumonic patients, but if there is great fever and oppression they cause distress. Cold applications are only useful in traumatic pneumonia. Cold applied to the head and cold sponging is very beneficial. Nitre and similar salts have no influence over pneumonia. It does not appear that the kind of treatment, notably the employment or omission of venesection, has any influence over consecutive diseases, especially tuberculosis.

BRIAN, R.—*On the Diagnosis and Nature of certain Chronic Pulmonary Affections.* Gaz. Hebdomadaire, 11, 12, 1859; 22, 24, 1862. Schmidt's Jahrb., vol. 117, p. 169.

Brian maintains that all cretaceous deposits in the lungs are not the result of tubercle, but may result from chronic inflammatory action. Disease of this kind (chronic vesicular pneumonia) may very closely resemble phthisis, but is much more likely to terminate favorably. Emaciation in the non-tuberculous disease is limited to the walls of the chest; the breathing is less impeded, the expectoration is more mucous, and hæmoptysis is much rarer. The lower as well as the upper part of the lung may be affected, and cavities may form. The progress is steady, but very chronic. Three cases in the author's experience have terminated fatally, seven have completely recovered, nine materially improved, and three have remained stationary.

SCHRANT, J. M.—*On Clear Percussion Sound, and its relation to Tympanitic.* Nederl. Tijdschr., p. 657, 1861. Schmidt's Jahrb., vol. 118, p. 326.

A sound appears clear when it gives the impression of being of uniform composition; it may proceed from a simple or a composite sounding body. A simple vibrating mass of air gives a tone, and this is always clear; also a combination of several tones always sounds clear. A clang (klang) is the entire impression made by a vibrating medium in union with a stratum of air, and this is always clear. A sound which gives no tone is a murmur. A murmur can also be simple or compound, and Savart's researches show that most murmurs contain weak tones in different proportions. A clang (klang) is deficient in a positive basal tone. Often, however, one perceives together with the murmur the accompanying tone, and then the murmur is rendered clear (*e. g.* the normal lung sound). A murmur is tympanitic when it is attended by a clang; if this predominates over the murmur, the tympanitic sound is at the same time clear, in the contrary case the sound is dull tympanitic. Non-tympanitic, according to Skoda, is only the negation of the clang-like quality, and consequently coincides with the idea of murmur. As a rule, such a murmur is certainly also dull, but may be also clear.

SCHRANT, J. M.—*On Skoda's doctrine of Consonance*. Nederl. Tijdschr., p. 481, 1862. Schmidt's Jahrb., vol 118, p. 327.

Schrant divides consonance into—(1) Simple ringing consonance. This shows the presence of cavities with firm walls; it gets the tubal character when it is produced in a bronchus; if it meets with râles, they also become consonating or ringing. (2) Nasal consonance. This indicates sounding spaces with firm walls, and of more or less tubular shape (ægophony). In it the three properties of being strengthened, of a more distinct articulation, and of the nasal tone, must be distinguished; the first two are explicable by the mere conduction of sound in tubes, the third is only to be explained by consonance. (3) Amphoric, and (4) metallic consonance. They often occur together, and indicate free-sounding spaces with firm walls; the latter proceeds from smaller, the former from larger, cavities with smooth spherical walls. In very small cavities the metallic clang may be generated only by percussion, and not by consonance. (5) Vocal consonance. The respiratory murmur presents not unfrequently modifications which resemble the sound of certain vowels. That which suggests the idea of the vowel *i* usually proceeds from a narrower tube than that which suggests the idea of *a* or *u*.

HYDE SALTER, M.D., F.R.S.—*Clinical Lecture on Pleurisy*. Brit. Med. Jour., July 11th, 18th.

Salter considers that serous inflammations, even of catarrhal origin, arise from blood-poisoning. According to his experience, ægophony depends on the presence of a certain quantity of fluid, the symptom ceasing when the amount of fluid is very large. Its persistence after good vesicular breathing has returned, as in one of his cases, Salter explains by supposing that a gelatinous coating of fibrine existing where it is heard is sufficient for its production. He does not believe that ægophony is generated at the upper margin of the effused fluid. Several points are indicated as aids to determine whether in a given case the pain is the result of pleurisy, or rheumatism. The principal are that in rheumatism the pain may be very severe and the pulse unaffected; the pain is produced by pressure upon as well as between the ribs, and by the movement of muscles which cannot affect the pleura. Percussion dulness and diminished vocal fremitus are very slow in disappearing. To give rest, to allay pain, and to promote vital power, are the indications to be fulfilled in the treatment.

BOWDITCH, H. J., M.D.—*Paracentesis Thoracis*. Amer. Quart. Journ. of the Med. Sc., Jan., 1863.

Bowditch gives a résumé of his experience for twelve years, containing the results of 160 operations on eighty-five persons. He has never seen the least permanent evil resulting from any operation, and only the slightest temporary difficulties, such as pain, slight dyspnœa, stricture, or cough, &c. This shows the innocuousness of the operation by means of the exploring trocar and suction-pump as suggested by Dr. Wyman. *Frequency of the operation*.—One lady was tapped nine times during eight and a half months; commencing when she was four and a half months pregnant, and in whom the orthopnœa was several times so great that death would have

supervened within twenty-four hours if the operation had not been performed. She is now tolerably well, but with a contracted chest. In striking contrast with this case, as it regards the frequency of the operation, while resembling it in the number of times it was performed, was the unique case of an elderly man, very recently under my care, and in which I tapped eight times in six weeks. The patient himself, a physician, earnestly and solemnly demanded the operation as a mere means of relief to intense distress. *Cases in which the patients recovered wholly.*—Twenty-nine out of the seventy-five patients got wholly well, apparently in consequence chiefly of the operation. The operation was performed generally when severe symptoms were manifest, and Bowditch was called in consultation. In a few a great quantity of fluid was recognised by the physical signs alone, the rational having been slight; but as the disease was chronic, an operation was deemed necessary. In all these cases the operations seemed the *first step* towards a cure. *The character of the fluid, and its influence on the prognosis.*—In twenty-six out of the seventy-five, serum was found, and twenty-one of these patients got wholly well. If after the first operation the fluid became purulent, an almost certain fatal prognosis should be made. Six such cases occurred. Four of the patients died, two were lost sight of, but when last seen were failing. Pus was found at the *first* operation in twenty-four cases. Once it was of the consistence of honey, but was easily drawn through the exploring tube. Seven of these patients recovered wholly, seven died; nine were relieved one or many times, but they had either a long and tedious illness, terminating usually in phthisis, or a fistulous opening, or a still doubtful result. *A sanguinolent fluid* at the first puncture (and by that I mean a dark-red, thin fluid, evidently stained with blood, though not coagulating) I consider almost certainly fatal, and a consequence of some malignant disease of the lung or pleura. There were seven of such cases. In six the patients died. In one there was a doubtful result, but apparently fatal tendencies were commencing. If the fluid is found sanguinolent at the second or any subsequent puncture, Bowditch deems it of comparatively *little* importance to the prognosis. A mixture of *bloody purulent fluid* at the first operation is usually fatal. Three cases, all fatal, occurred. A *fetid, gangrenous* fluid is very rare, only one case having occurred, and that fatal; but in this case infinite relief from horrible orthopnoea was obtained, and it never returned, though the patient sunk and died in a few days. Gangrenous pleura was found. Bowditch has operated once in pneumo-hydrothorax with temporary relief and comparative ease for several days. To theoretical objections against such a proceeding, he replies that as the operation can do no harm, and may give much relief, it is advisable in any case where the dyspnoea may be so great as to require it. *Cases where no fluid is obtained.*—These, seven in number, occurred mostly in the earlier operations, and the failure was often owing, no doubt, to the cautious and slow manner with which the trocar was plunged between the ribs, carrying thus the false membrane of the pleura costalis before the instrument instead of piercing it. At other times, from an error of diagnosis, the operation was done, when instead of a fluid there was simply an unexpanded lung and thick false membranes on the pleura, causing as much dulness on percussion and absence of respiration

as a fluid would have done. The differential diagnosis of the two was not at first quite so easy as it is now. Inspection is usually the test between the two conditions; the intercostals being distinct and depressed when a membrane exists, but very indistinct and level with the ribs, or possibly prominent, when a fluid occupies the chest. Once an immense tumour occupied and uniformly distended one pleural cavity, and in its course presented all the phenomena, natural and physical, of simple pleurisy. Bowditch tapped three times, viz., at the back, side, and front, at the same visit. No evil followed. With respect to Trousseau's statement, that pleurisy of the right side is often or always tuberculous, Bowditch finds that in twenty-five cases fourteen were of the right side and eleven of the left. Of the former, only one person is mentioned as having tubercles, and in that the pleurisy was cured and the pulmonary symptoms mitigated. Of these same fourteen persons tapped in the right side 28.57 per cent. died, 64.28 per cent. were cured, and 7.14 per cent. remained doubtful. Whereas of the eleven cases tapped on the left side, 45.45 per cent. died, 36.36 got well, and 18.18 were doubtful. In other words, twice as many have got well from tapping the right side as the left, and only half as many have had doubtful results from operations on the right side as in those where the left side has been tapped. Bowditch's experience, therefore, is opposed to Trousseau's. *When shall we operate?*—Experience teaches us to operate in every case, however recent or chronic may be the attack, provided there is permanent or occasional dyspnoea of a severe character, evidently due to the fluid. There is, of course, more hope of doing good where the disease has not been of too long duration, is uncomplicated with phthisis or any other disease, and where, moreover, the amount of fluid seems directly the cause of the trouble. Bowditch deems it best to operate in *any*, even in latent cases, where the pleural cavity gets full of fluid, and, if after a reasonable amount of treatment, the fluid does not diminish. *Where shall we operate?*—The point originally chosen by Drs. Wyman and Bowditch, viz., in a line let fall from the lower angle of the scapula, and between the ninth and tenth ribs, seems the most appropriate point at which to make a puncture. Bowditch has, however, tapped under the axilla or in the breast, when the case seemed to require it. In selecting the precise intercostal space on the back, Bowditch usually chooses one about an inch and a half higher than the line on a level with the lowest point at which respiratory murmur can be heard in the healthy lung of the other side. Bowditch never waits until *pointing* commences, for then he is sure that pus will be found. If pointing without opening has commenced he does not necessarily tap in that place, as recommended by the older surgeons, but seeks the most depending point in the chest. While thus desiring to operate before a local distension shows itself, he dislikes or refuses to tap where there is contraction of the intercostal muscles; and he feels certain of getting fluid only where there is distension or flattening of the same. As to the objections to the operation, viz., that "we may puncture the lung;" "we may let air into the pleura;" "we may by our strong suction injure the lung;" "the instrument often fails to operate;" "the connecting tube between the pump and the trocar collapses, and thus checks the flow of liquid;" "the liquid may be too thick, and cannot be drawn through the small

canula ;" "we may excite inflammation of the pleura ;" "the operation is useless, because non-tubercular cases will get well without, tubercular will die in spite of it ;" to all these Bowditch thinks it sufficient to reply that, with the experience he has had, they are simply absurd. Let any man have good instruments and manage them skilfully on proper cases, and he will agree to the truth of his statements. The operation is imperfect, it cannot cure all, but it has relieved many, and in a few instances has been the sole means of saving life. On the other hand, Bowditch believes that some have died for the want of it. In the earlier years of his practice he had seen men die with sudden dyspnœa, or after months of obscure disease, with one pleural cavity filled with serum, and not a particle of other disease ; and, finally, he has seen tubercular phthisis follow after months of debility, from what was simple pleurisy at first. Dr. Wyman's instrument and method exactly supplied a want Bowditch had long felt, and now, with his experience of their efficiency and safety, Bowditch affirms that he is as ready to puncture the chest as to draw a tooth or to vaccinate a child.

BIERMER.—*On Pneumothorax.* Schweiz. Ztschr., ii, p. 101, 1863. Schmidt's Jahrb., vol. 119, p. 179.

Biermer states that the presence of vocal fremitus is not inconsistent with the existence of pneumothorax. Cardiac murmurs are most likely to be heard when the disease is on the left side, when the quantity of air effused is large, and the pericardium is surrounded with an air-filled space capable of resonance. Biermer believes that pneumothorax may occur without perforation of the lung, probably from the decomposition of an empyema. The lung in such a case may be perforated from without. In one case he mentions pneumothorax resulted from the breaking up of an hæmorrhagic congestion of the lung in a typhus patient. In this instance the pitch of the metallic sound was higher in the sitting than in the lying position, contrary to what he had previously observed in other cases, (*v.* Schmidt's 'Jahrb.,' vol. 119, p. 35). He accounts for this by remarking that in pyopneumothorax the long axis of the effusion is parallel to that of the body, so that in the horizontal position it is longer than in the vertical.

MERBACH., Varges' Ztschr., ii, p. 16, 1863. Schmidt's Jahrb., vol. 120, p. 47.

Records two cases of pneumothorax, in which the pitch of the metallic sound was very clearly observed to vary according to the position of the patient, being materially higher when the affected side was uppermost, than in the supine position. With regard to the size of the sounding cavity necessary to produce a metallic tone, Merbach finds that a diameter of four centimetres (one and a half inch) is sufficient.

LITTLE, W. S.—*Case of Pneumothorax without Perforation, rapidly consecutive on Simple Hyperacute Pleurisy.* Dublin Quart. Journ. of Med. Sc., Nov., 1863.

The patient, æt. 22, previously in robust health, without any predisposition to pulmonary or any other disease, was attacked with severe pleuritis, and died in five days. There was universal exudation of lymph

over the whole serous surface, with about 38 oz. of serous effusion. The right side was enlarged, the mediastinum remarkably displaced, and the intercostal spaces protruded. The lung was completely flattened, but was perfectly sound and capable of reinflation. It did not contain a single tubercle, or anything morbid. Little considers it fully proved by his case that in certain very rare cases the pleura is capable of taking on a peculiar morbid action, whereby air is copiously secreted into the pleural sac.

ROSENTHAL, M.—*On Pneumothorax*. Wiener Med. Halle, 4, 5, 8, 1862.
Schmidt's Jahrb., vol. 117, p. 170.

Among 4140 patients, Rosenthal had 464 phthisical, and of these 7 (3 males and 4 females) presented the signs of pneumothorax. The disease was in five on the left side. Six of the seven terminated fatally. In one case the œsophagus was perforated opposite the sixth dorsal vertebra; the edges of the opening were turned outwards, giving it a funnel shape, and in this opening there was found a small flat piece of bone; the right pleura contained a large amount of chocolate-coloured effusion.

DIGESTIVE SYSTEM.

FLINT, A., M.D.—*Clinical Report on Hydro-peritoneum, based on an Analysis of Forty-six Cases*. Amer. Journ. of Med. Sc., April, 1863.

The spleen was found to be enlarged in only a small proportion of cases, and in one it was small and wrinkled. Disease of the heart did not appear to have much causative relation to the existing cirrhosis of the liver. Thus, of thirty-two cases in which the condition of the heart was noted, as determined either by autopsical examination or by physical signs, in five cases only were there lesions involving enlargement of this organ. In six out of eleven cases the kidneys were manifestly diseased; in all of these but one they were enlarged and granular. It is, however, by no means clear whether the hepatic disease originates the renal, or *vice versâ*, or whether both have some common cause. Of twenty fatal cases, intemperance in drinking was acknowledged in seventeen. Of twenty non-fatal cases, intemperance was acknowledged in twelve. In two cases only was it certain that the patients were not in the habit of drinking, one of them being a child twelve years old. In fifteen cases, where the point was particularly mentioned in the history, it appeared that the patient had been in the habit of drinking spirits undiluted on an empty stomach. In eighteen cases, where the length of time is noted during which the habit of spirit-drinking had existed, it was found to vary from eight or several years to twenty-five. The supervention of dropsy in ten out of twenty-two cases followed on more or less numerous attacks of intermittent fever. Taking albuminuria as a diagnostic criterion of disease of the kidneys, the latter very rarely existed with hydro-peritoneum, a result which is contrary to that derived from autopsical examination as above stated. In the great majority of cases the disease occurred between twenty and fifty years of age, and in most between thirty and forty. Under the head of symptomatology, it is mentioned that there is an absence of pain, soreness, and tenderness, and of tension of the abdominal

walls from tonic rigidity of the muscles. The dropsical effusion takes place rapidly, which seems to show that other causes are in operation in the production of this result besides the hepatic obstruction, which would not increase suddenly. Flint does not consider that the size of the liver and spleen can be accurately ascertained merely by percussion. Palpation immediately after tapping affords most information. Hæmatemesis occurred in six cases, diarrhœa in eight; both appeared to have an unfavorable influence. It was found that in about one half the cases in which hydro-peritoneum and œdema of the lower limbs coexist, the latter precedes the former; and that when this is found to be so, it is not to be inferred that the dropsy is associated with renal or cardiac disease. He ascribes the œdema to pressure of a small amount of effusion on the iliac veins. Icterus was a rare symptom; it was observed only in seven of the forty-six cases. Anæmia, more or less marked, existed in the great majority of cases. As to the therapeutic management of hydro-peritoneum, the first object being generally to effect the removal or diminution of the peritoneal effusion, cautious trial may be made of diuretics and hydragogue cathartics. If these means do not prove promptly efficacious (as they will very rarely do), it is useless to persist in the former and injurious to continue the latter (hydragogues). Tapping should be resorted to as soon as the abdomen becomes distended, and may be repeated as often as the effusion accumulates sufficiently to produce distension. If the system be not much debilitated, all alcoholic beverages are to be interdicted; and if these seem to be required, or the patient have not sufficient resolution to forego their use, wine and malt liquors should be substituted for spirit. If spirit must be taken, it should be taken diluted, and not on an empty stomach. Tonic remedies (as iron and quinine) are to be prescribed. A nutritious diet is important, and the quantity of liquid ingested should be as much restricted as practicable, the object being to render the blood rich in quality without increase of quantity, avoiding anæmia and hydræmia. In general terms, the hygienic conditions should be as good as possible. If diarrhœa exist, it may be relieved by appropriate remedies, in some cases, at least, without injury, if not with benefit. It is dangerous to resort to scarifications to relieve excessive œdema of the genital organs. As to the course and termination, of the forty-six cases which have been analysed, twenty-four are known to have ended fatally. Of the twenty-two non-fatal cases, in eight there had been no improvement when the patients were last heard of. Doubtless in most, if not all these cases, the termination was fatal. In four cases, when the patients were last heard of, more or less improvement had taken place, but the dropsical affection continued. In ten cases, the dropsy having disappeared or been removed by tapping, the patients were free from the affection when last seen or heard from. The period during which it is known that they continued exempt from dropsy varies from a few weeks to eighteen months. Only one case out of the whole number appears to have actually recovered. The duration of the disease, dating from the commencement of the dropsy, in the fatal cases, varied from six weeks to seventeen months. The average duration in sixteen cases is about five months. Flint concludes that the prognosis is unfavorable in proportion as we have reason to believe that the dropsy is exclusively

due to irremediable lesion of the liver. He thinks that more success will be attained by resorting early to tapping, and relying more on tonic medication, than by confining treatment to the use of diuretics and hydragogue cathartics.

KELLER, A.—*On Œsophagostenosis*. Oesterrh. Ztschr. f. prakt. Heilk., viii, 1862. Schmidt's Jahrb., vol. 118, p. 35.

Keller during the course of five years met with thirty-five cases of this condition in children from the age of six months to fourteen years; most of them were from two to four years old. Of this number, twenty-three were cured, three improved, four remained under treatment, five died. The cause of the stenosis was in all the swallowing of solution of caustic potash. The duration of the treatment varied from three months to a year and a half. Bougies were used to dilate the stricture as it became developed. A circumstance which may cause trouble is the swallowing of morsels too large to pass the stricture, such as bits of meat or stones of fruit. One case of death occurred from a cherry-stone getting into this position.

MEISSNER, H.—*Recent Contributions to our Knowledge of Trichina Disease*. Schmidt's Jahrb., vol. 117, p. 45.

Meissner alludes to several epidemic appearances of this disorder. The first which excited general attention occurred at Planen, where twenty-five to thirty persons were attacked, four out of sixteen treated by Böhler and Königsdörffer were seriously ill, and one died with prodigious dropsy and obstinate diarrhoea. In three patients a portion of muscle taken from the arm was found to contain living trichinae. The epidemic witnessed by Sandler in Magdeburg, which prevailed during five summers (1858—1862), and affected 300 persons, is believed to have been of this kind (*v.* 'Year-book,' 1863, p. 167). A third, less extensive, but very grave outbreak, was observed by Simon and Herbst at Calbe. It affected over thirty-eight persons residing in four contiguous streets. Eight of these died. In one of the fatal cases numberless trichinae were discovered on dissection, and it was found on inquiry that all the inhabitants of this district obtained their supply of meat from the same butcher. He denied ever killing any diseased cattle, but fell sick himself with his wife and daughter of the same disease, the wife dying of it. Of the thirty-eight, all but two had eaten pork in one form or other, and it is very possible that it was not thoroughly cooked. The severity of the disorder depends partly on the number of trichinae swallowed, partly on the health and capacity of resistance of the individual, and on other causes which may hinder or promote the development and migration of the parasites. Apart from differences thus occasioned, the symptoms, except in slight cases, are very uniform, indeed sufficiently so to enable a diagnosis to be made from them alone. The disease begins constantly with catarrhal irritation of the gastro-intestinal mucous membrane, with subtyphoid phenomena, a feeling of general illness, dulness, loss of appetite, nausea, and constipation. After a few days œdematous swelling of the face suddenly comes on, with the feeling of tension, without notable redness, heat, or pain of the skin. There is now pyrexia, with thirst, heat, nocturnal restlessness, general pains in the limbs, unusual oppression of the chest, especially at the epigastrium,

which sometimes increases paroxysmally for some hours to a deathly anguish, with occasional syncope and intermittent weak pulse. In many, especially in grave cases, violent sweating occurs, with an eruption of miliaria. Consciousness is unimpaired, and only sometimes is there slight nocturnal delirium. After from three to five days the swelling of the face mostly subsides, while œdema of the limbs appears, especially of the lower. At the same time there comes on remarkable painfulness and stiffness of the back and limbs, so that they are kept motionless in a semi-flexed position, and resent even the slightest touch of the skin. The muscles are contracted, swollen, hard, and in a condition similar to that of rigor mortis. In some instances the patients were completely paralysed, and could not even turn or raise themselves in bed; some even could not carry food to their mouth. A not uncommon and early symptom was hoarseness or loss of voice, which reminds one of the statements of Henle, Bischoff, and Virchow, as to the very abundant development of trichinæ in the small muscles of the larynx. Sometimes dysphagia was observed, or strabismus, or incomplete mobility of the eye. Recovery in most cases ensued very gradually after some weeks, the symptoms slowly subsiding. Diarrhœa and sweating continue, however, for a length of time; and numerous pustules break out on the skin, especially of the back, and change into small, very painful ulcers, or in exceptional cases are associated with gangrenous spots. Desquamation of the skin, falling off of the nails, glandular inflammations, and subcutaneous abscesses, are observed in some instances. Moderate muscular pains and extraordinary emaciation of the limbs remain often for weeks after recovery, and may, perhaps, be regarded as the signs of a chronic state of the disorder. If the trichinæ in the muscles are not yet enclosed in chalky capsules, it is probable that there are still mature individuals in the intestines, which will daily make their way outwards. It is, therefore, of the first importance to clear out the intestines by active purgation. Kuchenmeister recommends calomel and jalap, followed the next day by jalap with powder of male fern. For the purpose of destroying the trichinæ on their way to the muscles, Kuchenmeister and others recommend *Ol. Terebinth.*, and Friedrich picronitrate of potash, which has an intensely bitter taste, and stains all the tissues, except the nervous centres, yellow. Its dose is 5 grains *ter die*. Friedrich asserts that it produced rapid amelioration in his patients, but this seems to require confirmation. Trichinæ appear to be very tenacious of life, having been found in putrid and in frozen meat, as well as in salt and smoked. Unless, therefore, great care is taken that pork, in all its varieties, is thoroughly cooked, infection may easily occur. Kuchenmeister and Leuckart have performed numerous experiments with animals to determine the effect of different modes of preparation on trichinæ contained in pork. They find (1) that smoked sausages contain a very considerable number of living trichinæ, though not so many as to cause any grave disease in the animals experimented on. (2) Most of the trichinæ are destroyed when ham is properly prepared, *i. e.* laid in brine for two days, and then smoked for three, but a small number of the parasites still remain capable, if the ham is eaten raw, of developing other individuals. (3) Pork which has been salted for at least ten weeks, whether smoked or not, is quite harmless.

MEISSNER.—Schmidt's Jahrb., vol. 119, p. 187.

Gives a second report on the same subject. He notices several limited epidemics, in some of which the phenomena were very much like those of influenzal catarrh. The actual presence of the trichinæ was not ascertained in any of them, but the resemblance of the symptoms to those produced by undoubted trichinæ disease was very close. The most extensive of these outbreaks seems to have been one at Blankenburg, of which an account is given by Scholz (*v.* 'Deutsche Klinik,' 49, 50, 51, 1862). He terms it epidemic gastro-rheumatic fever, with acute œdema of the subcutaneous and muscular areolar tissue. It seems to have lasted from 1859 to 1862, and to have affected 278 soldiers, without reckoning patients in civil life. Many of the cases seem to have been but slight; in 130 the duration of the disease was only 1 to 3 days; in 42 it was not above 1 week; in 33 not above 2 weeks; in 16 not above 3 weeks; in 14 it did not exceed 4; in 13, 5 weeks; in 12, 6 weeks; in 4, 7 weeks; in 10, 10 weeks; and in 4 it varied between 71 and 94 days. The above dates refer to the discharge of the patients from the hospital, but weeks elapsed in the majority before they recovered their former strength. The first cases of an epidemic were always the severest, and the two fatal cases which occurred belonged to the same period. Most of the cases happened during the first six months of the year; only in the year 1859 were any met with in the second half. This is explained by the circumstance that pigs are killed only in the latter part of the winter (after Christmas) and in the spring. The disease chiefly affected persons in early and middle life; those above the age of fifty-five were exempt, as well as those below the age of twelve. Many more men were attacked than women, and with few exceptions the patients belonged to the lower classes. For the most part the disease set in suddenly with heat and sweating, succeeding to a smart rigor; more rarely it commenced gradually with dyspepsia, loss of appetite, vomiting, diarrhœa, and rheumatic pains, followed by fever and swelling of the face. The course varied with the intensity of the disease. The abortive form, where the duration did not exceed a week, commenced suddenly with pain and heat of the head, redness of the face and eyes, swelling around the latter, pains in the neck and the limbs, coated tongue, sometimes vomiting, usually constipation, and immoderate lassitude and tendency to sweating. In cases of medium severity (lasting one or two weeks), instead of improvement occurring on the third day, the fever and swelling of the face increased, the tongue became more coated, and the dragging pains in different muscles became more urgent. In many instances there occurred œdematous swelling of the arms and legs, as well as the characteristic muscular contractures. The fever, however, did not run high, declined on the fifth, seventh, or ninth day, and at the same time the other morbid phenomena disappeared rapidly, the tendency to sweating and the muscular weakness continuing some time longer. In the graver cases the disease mostly set in with marked rigor, but sometimes also in an insidious manner, with a gradual increase of originally obscure symptoms. The patients lay almost always motionless, with swollen face, their arms flexed and swelled, their legs also swollen, but extended; they complained of violent pains in the forehead, in the arms and legs, some-

times also in the back, which were so severe that they often uttered loud cries; the mouth could be but little opened, and the arms could not be extended without pain. All the patients during the first weeks of the disease were completely deprived of sleep, but only the two fatal cases had delirium. The gastric symptoms were always well marked, the tongue was white, there was anorexia, much thirst, mostly constipation, rarely any diarrhoea, no abdominal pains or swelling. Fever ran high, the pulse was 100 to 120. After fourteen days the heat and the frequency of the pulse diminished, sometimes with critical phenomena, but it was always remarkably long, often three or four months, before the strength was restored. Of all the symptoms, œdema of the subcutaneous areolar tissue and of the muscular was the most prominent, showing itself first around the eyes, and producing painful tension and difficulty of moving the muscles. From the muscles of the eyes being affected, vision was impaired, especially as respects looking upwards; from affection of the masseters, opening the mouth was painful; the tongue was moved with difficulty; and at the same time, or soon after, also the muscles in other parts of the body, especially in the arms and legs, swelled and became very tender on pressure. In the slightest cases the œdema often appeared only after the disease had passed off and the power of progression was restored; in the graver cases it attained sometimes to such a pitch that actual fissures of the skin were formed, from which an albuminous watery fluid escaped, and which left numerous transverse silvery-looking cicatrices. In no instance was albumen detected in the urine. The rheumatic pains and the extraordinary weariness, doubtless, depended on œdema of the muscles, occasioned, as may reasonably be supposed, by the trichinæ. The amount of fever and of acceleration of the pulse varied much in different cases. During reconvalescence the high evening temperature and pulse-rate was remarkable, which appeared to delay considerably the complete recovery of strength. The skin, except during the first days of fever, was very pale, chlorotic, in one fatal case livid and icteric, in another of a marked lemon-yellow colour. It was worthy of remark, especially in the summer of 1859, how great was the tendency to exhausting sweats, which were often cold, and occurred at night, in spite of the patients being kept cool. Various cutaneous affections ensued, as herpes, small furuncles, and occasionally even carbuncles of some size. Spanæmia, even in the slightest cases, and after the disease had continued only a short time, became very apparent, and chlorotic murmurs were heard in the vessels of the neck. The respiratory organs were only affected in individual cases; some who had suspicious symptoms of tuberculosis suffered from bronchitis and severe cough. The morbid changes found on examination of the two fatal cases consisted of extreme serous infiltration of the subcutaneous and muscular areolar tissue (the serum pouring out in quantity when an incision was made into the substance of the limbs), of copious serous accumulations in the pericardium and pleura, of pulmonary œdema and hypostasis. The digestive organs were healthy, except that there was serous swelling of their mucous membranes. The kidneys were healthy, and the spleen, except in one instance. The blood was everywhere uncoagulated, and thinly fluid. [Although in this epidemic it is not absolutely proved

that trichinæ were the cause of the disorder, yet, as Meissner regards it as almost certain, it seems worthy of consideration whether some obscure quasi-catarrho-rheumatic affections in our own country may not have a similar origin.—[Ed.] In a communication from Prof. Zenker ('Ber. d. Ges. f. Natur. u. Heilkunde in Dresden,' 1861—1862, p. 49) it is stated that three persons—a husband, wife, and niece—living together, were suddenly attacked with pain of all the muscles, paralysis, and other symptoms of trichinæ disease. The parasites were detected in some recently killed pork of which they had partaken, and also in their stools. Purging was adopted with advantage. The earlier this measure is put in force the better, but it results from various experiments with rabbits that it may be beneficial as late as the eleventh week. Fiedler ('Virchow's Arch.,' p. 573, 1863) states that he has repeated Friedreich's experiments with picro-nitrate of potash on trichinised rabbits, but has arrived at contrary results. He finds that the drug has no effect whatever on the parasites, whether they are in the intestines or in the muscles; that it does not impede the migration of the embryos or arrest their development. In fact, it killed, if given in large doses, as nine or ten grains, the rabbits instead of the trichinæ.

OGLE, J. D., M.D.—*Observations on the Treatment of Tænia, especially by the use of the Oil of Male Fern.* Brit. Med. J., March 14th.

Ogle gives twenty-four cases in which this drug was at any rate most useful in causing the death and expulsion of long lengths of the worm, extending in two instances to twenty-four and thirty yards. The ages of the patients varied from three and a half to fifty-seven years. It does not appear that the head was found in any case. In most cases the action of the remedy upon the patient was neither troublesome or disagreeable. Ogle has used other vermicides, as Kameela, Kouso, Rottleria tinctoria, and Santonine, but none have given such good results as male fern. Three cases are mentioned in which it evidently was more efficient than turpentine.

LAVAL.—*On the Influence of Intestinal Worms on the course of Malarious Fever.* Gaz. d'Orient, 7th Oct., 1858. Schmidt's Jahrbuch, vol. 119, p. 54.

Laval states—(1) That intestinal worms only produce intermittent symptoms when the patient is under the influence of malaria. (2) They form a grave complication. (3) Quinine is not of decided efficacy until the worms have been expelled. The ascaris lumbricoides was the species present in Laval's cases. Santonine was given with good effects.

TRAUBE, L.—*Deutsche Klinik*, 6, 1863. Schmidt's Jahrb., vol. 119, p. 88.

Affirms that colic pains are produced by the strong peristaltic action of portions of intestine situated above some obstructed part. The contractions come on periodically, and cause considerable tension of the wall of the bowel, which is unable to drive on its contents. Hence the pains.

DONALDSON, J.—Edin. Med. J., Dec., 1863.

States that he obtained, during the cholera epidemic of 1861 a wonderful amount of success from the employment of chloric ether with Spt. Ammon. Aromat. ana ʒss every twenty minutes. Hydrocyanic acid was added when the vomiting was more than usually severe, and solution of muriate of morphia when the alvine dejections were unusually great, or when there was unusual restlessness and inability to sleep after the collapsed stage was fairly passed. Tr. catechu was also used in some cases as an astringent. Of eighteen cases of true malignant cholera treated in the garrison hospital, six only died, and the remainder speedily recovered. Of several apparently hopeless cases in the 38th Regiment, not one died. A little brandy and water was given occasionally to relieve thirst, and sulphuric acid drink if desired.

TROUSSEAU.—*Vertigo Dyspeptica*. Gaz. des Hôp., 39, 1862. Schmidt's Jahrb., vol. 117, p. 34.

This affection is unusual before the age of fifty, and is preceded by disordered digestion. It is not felt in a posture of repose, but comes on immediately as soon as the patient rises, or looks upwards, or turns round quickly, or looks at trellis work or narrow-striped carpets. It is not produced by straining or such movements as would cause congestion of the head. The giddiness is attended with nausea, but not with peripheral disorders of motion and sensation. In giddiness from cerebral affection there are signs of congestion of the head, sense of weight, lassitude, and formication in the extremities, without nausea and vomiting. Trousseau gives soda and magnesia in infus. quass.

MÜLLER; WITT.—*Cases of Gastric Fistula*. Wurtemb. Corresp. Bl., xxxii, 27, 1862. Hygiea, xxiii. Schmidt's Jahrb., vol. 117, p. 171.

One patient was 38, the other 27 years old; both were females. The first died, and nothing morbid was found in the stomach, except the perforation, which was in the greater curvature. The other patient recovered. In her the gastric juice was of sp. gr. 1.04, acid, and contained muriatic and lactic acids. The latter was the more abundant, and was found with every variety of diet.

BLANCHET.—Jour. de Méd. et de Chir. pratiq., Sept., 1863.

Asserts that he has succeeded on several occasions in passing a sound down the œsophagus, through the pyloric orifice of the stomach, and some way into the small intestine. By this proceeding he has procured the speedy evacuation of foreign bodies, and has twice successfully managed an obstinate ileus with persistent vomiting. While the sound is in the intestinal canal Blanchet moves it quickly up and down, which probably excites energetic peristalsis.

RENZ.—Wurzb. Med. Ztschr., p. 374, 1862.

Records the case of a nervous female, who, after eating strawberries or bilberries, had superficial inflammation of the mucous membrane of the tongue. Pears produced in her smart urticaria of both legs.

DEMME, H.—*On Glossitis, and its treatment.* Schw. Ztschr. f. Heilk., ii, p. 73, 1863. Schmidt's Jahrb., vol. 119, p. 295.

Demme distinguishes glossitis profunda from glossitis superficialis. The varieties of the latter are gl. catarrhal., gl. exanthem., gl. toxic., gl. croupous., and gl. diphtherica. These he treats but briefly. Gl. profunda has two varieties—gl. phlegmonodes (29 cases), and myo-glossitis (3 cases). These two may again be arranged, according to different peculiarities, into (a) suppurative gl.; (b) tuberculated gl., which is characterised by anæmic necrosis of cell-growths; (c) fibrous gl., producing new formation of fibrous tissue, so-called macroglossia; (d) gummatous, or syphilitic gl., which probably commences in the proper muscular substance, and usually appears in the middle of the tongue; (e) gangrenous gl., which only occurs in similar states of angina, or as anthrax in cases of malignant pustule. After describing the symptoms, which are more or less acute, he states the mortality of his thirty-two cases. Two perished from œdema of the glottis and pyæmia; one from gangrene; twenty-two cases recovered; the remainder were only improved. In the matter of treatment, Demme lays stress on energetic and early antiphlogistic measures, consisting either in the application of ice to the tongue or to the submaxillary region, or in detraction of blood. For the latter purpose leeches may be applied under the jaw, or the tongue may be scarified. The incisions should be longitudinal, and made pretty deep, and the bleeding from them encouraged. Opening the ranine-veins is not advisable. Brushing the surface of the tongue over with strong tincture of iodine is of great value in all stages of the disease; it produces energetic contraction and induration of the tumour, occasionally with formation of scabs or vesicles. Its action is most evident when fluctuation is already present; it causes resolution without any escape of pus. It is generally necessary to repeat the application daily. If there appears danger of œdema of the glottis, incisions must not be delayed. Internal treatment must be regulated in accordance with the general state of the system. Similar local treatment is requisite also in the chronic forms.

BERGER.—*On the Treatment of Dysentery.* Wien. Med. Wchnschr., xiii, 22, 1863. Schmidt's Jahrb., vol. 120, p. 48.

In all cases which resist simple treatment, or where there are signs of advanced ulceration, Berger recommends the use of injections of nitrate of silver. He gives gr. vj—x, dissolved in ʒiij of water, together with a few drops of tincture of opium three or four times in the twenty-four hours. The remedy is of no avail, he believes, if given in pills or solution by the mouth. In adynamic or septic dysentery, Berger thinks the above mode of treatment is still the most efficacious. The diet must be semi-fluid, consisting of barley and rice, jelly and broth, and rest in bed is essential.

NELSON, T., M.D.—*Medical results of the recent Chinese Wars.* Brit. and For. Med.-Chir. Rev., July, 1863.

With respect to dysentery, Nelson shows, from the returns, that in the years 1840-41-42, out of 15,470 men employed, there were 2102 cases, of which 188 died and 60 were invalided. In 1857-58-59, out of 24,980 men employed, there occurred 2006 cases of dysentery, of whom

606 were invalided and 465 died. On the first occasion, venesection, leeching, and calomel in large doses, or carried to salivation, was employed; on the second, depletion was much less employed, and the free administration of mercury was foreborne, while ipecacuanha, as recommended by the Indian practitioners, was largely tried, as well as the older remedial agents. In presence of these facts, Nelson calls upon practitioners to decide whether the much-contemned practice of twenty years ago has not been superseded somewhat rashly, in consequence of its modified measure of success, for another, which, conforming to the quietism of the day, has brought about a series of results that in these times has no parallel.

EWART, J., M.D.—*On Tropical Dysentery*. Indian Annals of Med. Sc. No. 16, April, 1863. Brit. and For. Med.-Chir. Rev., July, 1863.

With regard to the ipecacuanha treatment, Ewart recommends it in the congestive, exudative, and ulcerative stages of almost every form and type of acute dysentery, as well as in the acute attacks supervening upon chronic dysentery. Its advantages are—(1) its simplicity; (2) its safety; (3) its certainty, compared with any other method; (4) the promptitude with which the inflammation is stopped; (5) the rapidity with which recovery takes place by resolution, or by granulation and cicatrization; (6) conservation of the constitutional powers; (7) abbreviation of the period required for convalescence; (8) decrease in the frequency of chronic dysentery; (9) decrease in the frequency of abscess of the liver; (10) diminution of mortality to cases treated; all of which are accomplished—(a) without local or general bloodletting, (b) without salivation, (c) without calomel and irritating purgatives, (d) without opium by the mouth. To the objections made against this treatment he replies that nausea is only temporary and evanescent; vomiting is an exceptional occurrence, and even when it does supervene it seldom lasts long. As much nourishment, therefore, as may be required to support the strength can be allowed in the intervals between the large doses of ipecacuanha. But what contributes more to the conservation of the patient's stamina and to the prevention of depression or asthenia, is the speedy cessation of the dysenteric process accomplished by the drug, followed by refreshing sleep, and the power of digesting and assimilating nourishing food. When uncontrollable sickness and vomiting succeed the employment of ipecacuanha, it is more than probable that some serious complication exists, such—as (1) abscess of the liver, (2) unchecked aguish or malarious poisoning, (3) irretrievable constitutional cachexia, (4) Addison's disease, (5) Bright's disease, (6) phthisis or tuberculosis, (7) strumous disease of the mesenteric glands, (8) permanent enlargement of spleen or liver, (9) peritonitis, with or without perforation of the gut, (10) the existence of extensive sloughing.

SECRETORY SYSTEM.

STOKVIS.—*On Urea as the cause of Uremia*. Schmidt's Jahrb., vol. 118, p. 26. Nederl. Tijdschr., Sept., 1860.

Stokvis found that the introduction of urea into the stomach of rabbits and its injection into the veins of dogs produced no bad effects which could be ascribed to the urea. Similar experiments with carbonate of ammonia tended to show the correctness of French's view as to the

dependence of uræmic phenomena on the transformation of urea into this agent. Other ammoniacal salts, as the muriate and oxalate, have the same effect. It appears from other experiments that urea is not decomposed in the blood of healthy animals; Stokvis adopts Treitz's view, that this decomposition takes place in the intestinal canal, which is found, after extirpation of the kidneys, or in cases of renal degeneration, to contain large quantities of ammonia.

STOKVIS, B. J.—*On Albuminuria*. Nederl. Tijdschr. v. Geneesk., vi, July, 1862. Schmidt's Jahrb., vol. 118, p. 38.

By experiments on himself and on animals, Stokvis found that removal of chloride of sodium to a great extent from the food did not cause albuminuria. The only result was that the per-centage of chloride fell from 1 to '2.—Dilution of blood by the cautious injection of water in quantities varying from 25 to 810 cc., both after bleeding and without it, did not produce albuminuria. There was only one case which formed an apparent exception, and in this blood was mingled with the urine, and the animal died in violent convulsions, showing that the pressure of blood in the vessels was increased. Introduction of fluid albumen into the stomachs of rabbits and dogs caused albuminuria; in the first, on the third or fourth day after the commencement of this diet; in the second, on the sixth or seventh. Eating eight or ten raw eggs on an empty stomach did not induce albuminuria in Stokvis, nor in two other individuals. Injection of fluid or albumen into the veins produces albuminuria, which lasts a longer or shorter time, and which is sometimes attended with hæmaturia. Ser-albumen, injected even in large quantities, did not produce albuminuria. This difference Stokvis refers to a difference in the composition of the two principles, but on the nature of this difference, whether chemical or physical, he does not decide. The author concludes, from his researches, that albuminuria may exist without renal disease, and, further, that it is not dependent on mere dilution of blood or deranged innervation. He considers that it probably depends on an altered quality of the albumen of the blood, such that it comes to resemble albumen with respect to its diffusion power in the kidneys. The following experiment is related in confirmation of this view. One dog had 130 cc. of urine, containing 0.79 per cent. of albumen, from a patient thus affected, injected (into his stomach?), and evacuated on the following day; 0.41 per cent. of albumen with his urine, on the next day 0.40 per cent., on the third day only traces, and on the fourth day none. An experiment with a rabbit gave the same result. In another dog, who had 135 grammes of normal urine, mixed with ox-blood-serum in the proportion of 1.59 per cent. injected, there was no trace of albumen in the urine.

PETROFF, A.—*On Uræmia*. Virchow's Archiv, xxv, p. 91, 1862. Schmidt's Jahrb., vol. 117, p. 35.

Petroff, from experiments on animals, arrives at the following results:—(1) When the functions of the kidneys are interrupted, Ammon. Carb. is formed in the blood. (2) Injections of Ammon. Carb. into the blood produce phenomena which are quite similar to the uræmic. (3) The degree in which these appear, and their character, depend on the amount

of ammonia in the blood, and on the condition in which it exists in that fluid. He finds that the quantity of ammonia in the blood and other fluids increases with the lapse of time after the removal of the kidneys, and especially that the quantity of free ammonia increases considerably. The amount of free ammonia at the end of forty-eight hours was nearly double the whole amount at the end of twenty-four hours. As the toxic effects were much more marked at the end of the longer period, Petroff ascribes them to the presence of free ammonia in larger quantity. Injections of ammonia in sound animals cause only transitory phenomena of irritative character, because the substance is quickly carried off by the kidneys. If injected into animals' veins whose kidneys have been extirpated, it causes symptoms just like those of uræmic poisoning, especially convulsions and coma.

CAMERON, J. C., M.D.—*On the Treatment of Acute Hepatitis in its suppurative stages.* Lancet, June 6th.

Cameron protests against the doctrine that positive evidence of pointing should always be obtained before any attempt should be made to evacuate the pus artificially. He affirms, on the contrary, that when we have just grounds for believing that abscess of the liver exists, we ought not to lose a day in evacuating it by puncture, and that we are both justified and safe in endeavouring to hit upon it with a trocar when deep-seated, avoiding the gall-bladder and large veins. He has seen men die with denuded and carious ribs, worn out by fever and diarrhœa, while the surgeon has waited for weeks to see the abscess point. The following directions are given:—"When the operation has been decided upon, but there is no particular prominence in any region of the liver, but merely a general fulness of the side (and this, perhaps, only distinguishable by going to the foot of the bed, and comparing from thence the right and left outlines of the trunk) a very careful examination may guide us as to the likely spot. We should trace all the intercostal spaces, and, if any superficial œdema be found, the abscess may be expected under it, and close at hand. The slightest intercostal fulness should be noted, and the patient desired to breathe deeply, while a finger is fixed with gentle pressure flat along the spot. If the breath be caught precisely under it on deep inspiration, that is the spot for puncture; and in the absence of local fulness, the place where the inspiration is most impeded must be our guide, with due attention to anatomical relations. It is remarkable how often one can determine the exact seat of the greatest pain in breathing, &c., within the size of half-a-crown or less. Three cases are related in illustration, which seem certainly to prove that deep puncturing of the liver may be performed without injurious results, and even may apparently act as a discutient of existing inflammatory swelling. In one remarkable instance, after about two ounces of pus had escaped from the canula, which had passed "some inches" deep into the side, it unfortunately slipped out, and could not be replaced. No harm, however, ensued, and the man made a good recovery.

BUDD, G., M.D., F.R.S.—*On the influence of a long course of Nitric Acid in reducing the Enlargement of the Liver and Spleen that sometimes results from the Syphilitic Cachexy.* Brit. Med. J., Sept. 5th.

The enlargement which Budd refers to is that which has been latterly described as due to amyloid degeneration. The most striking examples of it are seen in the victims of scrofulous or syphilitic caries. Three cases are related in which mxx of dilute nitric acid were taken ter die for a period varying from fifteen to four months, without inducing excessive acidity of the urine, or any inconvenience attributable to undue acidity of the stomach. Sarsaparilla, iron, or bark, were conjoined with the acid. The result of his experience leads Budd to conclude that when the liver and spleen have become diseased in the manner specified, in sequel to protracted syphilitic disease of the bones, nitric acid, long taken, has a remarkable influence in gradually effecting the removal of the morbid deposit to which these organs owe their increased size, restoring the organs to a more healthy condition, and improving the general health. The cases further afford a strong presumption that nitric acid, taken earlier, would prevent the disease of the abdominal glands, which, when established, it tends to remedy. It is, however, essential that the disease of the bone, on which the enlargement of the liver and spleen is consequent, should be arrested; if this cannot be effected, the malady, though even then its course may be retarded, usually makes progress, and life is cut short by renal disease, which very often accompanies that of the liver and spleen. Budd suggests that a long course of nitric acid may have influence in remedying and preventing glandular enlargements, chronic ulcers, and other forms of scrofulous disease. He is persuaded that in tuberculous disease of the lung nitro-muriatic acid, long taken, tends to prevent the further deposit of tubercle.

CUTANEOUS SYSTEM.

HEBRA.—*On the Internal and External Application of Iodine Preparations in Diseases of the Skin.* Allg. Wien. Med. Ztg., vii, 3, 1862. Schmidt's Jahrb., vol. 117, p. 26.

Hebra insists that the internal administration of iodine is undesirable, because it only modifies cutaneous disease when it is given so as to produce disorder of nutrition and anæmia of the skin, and that, as the general condition improves, the cutaneous disease reappears. Only in lupus does he consider iodine as of real utility, whether the affection be of syphilitic or scrofulous character. The external use of iodine is, on the other hand, very beneficial. Hebra employs the tincture or a solution in glycerine, in chloasma and lentigo, and in lupus. In acne and sycosis he uses Ungt. Sulph. Iodidi. Ungt. Hydr. Iod. and Hydr. Biniod. are beneficial in psoriasis, lichen, and ecz. squamos. Piringer confides much in the local application of Tr. Iodinii to prevent pitting of the face in smallpox. This he does by arresting the development of the pustules and the swelling of the skin. If the patient is seen on the first day of the eruption, the whole face, including the eyelids, must be brushed over with Tr. Iodinii ten times, making half-hour pauses between. The eruption is stopped, and no swelling of the face occurs. If treatment is commenced on the second day, twelve applications must be made, the first eight at half-hour intervals. Some swelling only occurs. If the patient is not seen till the third day of the eruption, fourteen to sixteen applications

must be made, the first at the same intervals. The swelling and the eruption are much checked, but a few pustules proceed to suppurate and form cicatrices.

HEBRA.—*On the Diagnosis of Eczema.* Brit. Med. J., March 7th. Wiener Med. Wochenschr., Dec. 27th, 1862.

Hebra includes under the term eczema all disorders of the skin which are attended in either their earlier or later stages by the presence of vesicles and serous discharge. Eczema may begin with an eruption of vesicles, or of papules, or of both together. The vesicles may speedily become purulent, and dry up into yellow crusts, which may fall off, leaving the condition known as eczema rubrum. Or after the development of vesicles the epidermis may be quite detached, leaving the rete mucosum denuded, and throwing out exudation. Again, when the exudation ceases, the parts pass into the infiltrated, red, desquamating phase, known as eczema squamosum, or pityriasis rubra. In this way five or more differently named skin affections may all be referred to modifications of eczema.

HUNT, T.—*On Diseases of the Skin developed in Schools, Workhouses, and Factories, from defective Hygiene.* Brit. Med. Jour., March 14th.

These diseases are chiefly the common ringworm (*porrigo scutulata*) and scabies, and both show a tendency to pustulation. They often persist month after month, in spite of the most careful treatment and the most scrupulous attention to cleanliness and ventilation. In one particular instance an endemic scabies persisted in a large girls' school for many months together in spite of cleanliness, ventilation, good drainage, nursing, and medical care; but nothing was of any permanent service until an entire change of diet was introduced, together with the daily exercise of the inmates away from the premises. The author states that these four causes atmospheric impurity, sameness of diet, insufficient exercise, and contagion; all of them, trifling in degree, are yet capable of working together for evil, and may thus become powerful agents in the promotion and perpetuation of disease.

VON VEIEL's *Report of Skin Diseases observed at Canstatt for the years 1855 to 1861.* Schmidt's Jahrb., vol. 117, p. 296.

The whole number of cases treated in seven years was 887, of whom 740 were cured, 126 improved, 21 unimproved, and 1 died. Of *eczema chronicum* there were 279 cases—42 universal, 237 partial. Only 5 of these were not benefited by the treatment. The most frequent cause is *hereditary tendency*, for in the parent or grandparent either the same skin disease had occurred (in 112 out of 279), or a similar eruption, in 28 cases, or a dyscrasic disease (as scrofula, gout, arthritis) allied to this form of eruption. Of the acquired diseases, syphilis, acute exanthemata, and itch, especially predispose to eczema, or cause it to be much more obstinate. A peculiar circumstance is, that sometimes only the younger sisters of a family are attacked, the elder ones remaining free, or the converse; or that all the brothers alone are affected, while the sisters escape. Diseases which occurred simultaneously or alternately with eczema

were asthma, acute rheumatism, furuncles, tonsillitis, pain in the head, chorea, hæmoptysis. In four fifths of the cases the winter caused an aggravation of the disease, in one fifth the summer. In treatment, tar seems to have been used very frequently as an external application; one very obstinate case of ecz. impetiginod. was cured by mercurial ointment rubbed in till it caused salivation. Internally iodine, mercury, iron, anti-mony, cod-liver oil were employed, arsenic but rarely.—*Herpes chronicus* was treated by mercurial inunction, counter-irritation, or cauterization. *Pemphigus chronicus* was best treated by a prolonged arsenical course, in the form of the Asiatic pills. It is considered to depend on a gouty dyscrasia from the excess sometimes of uric acid, sometimes of ammonia, sometimes of combinations of chlorine in the urine. *Impetigo* is not classed with eczema; its pustules are said to be distinguished from the vesicles of the latter by containing fibrine, phosphates of oily matter, and carbonate of soda. It is almost always dependent on scrofulosis. Of *Pityriasis*, 19 cases were all cured, the treatment consisting in the use of potash soap, tar ointment, diluted solutions of caustic potash, or chloride of zinc. Of *psoriasis*, there were 145 cases, of which 125 were cured, 19 improved, 1 proved refractory. Hereditary tendency had a marked influence, as mostly the same eruption, more rarely an allied one, had existed in the parents or grandparents. Of acquired disease, hæmorrhoids and scrofula were those which had most causative effect. Whilst inherited tuberculosis disposes to very obstinate secondary and tertiary syphilis, persons affected with hereditary psoriasis usually remain exempt from the latter. Arthritic psoriasis is sometimes attended with itching. Arsenic in non-specific psoriasis was the chief remedy, with tar ointment, vapour and potash baths externally. *Ichthyosis* (twelve cases) was always congenital, and in eight of these hereditary influence was apparent, mostly in the paternal line. Shortly after birth, it has some resemblance to pemphigus. Vaccination seldom succeeds in the ichthyotic. *Lichen* is said to be hereditary, mostly very obstinate, and prone to relapse; its treatment is the same as that of eczema. *Prurigo* is treated by the application of potash soap for many weeks, or by baths of Hyd. Bichl. to salivation. Mild thermæ, as those of Schlangenbad, or Leukerbad, are useful, also alkaline baths and cold packings and washings. *Chronic miliaria* occurred in six cases, five of which were cured, one dismissed on account of dropsy. The outbreak of the eruption is preceded by morning sweats, followed by extreme oppression and high fever. Before the first eruption has got well, a fresh one begins, with the same phenomena. The perspiration is highly acid; after the eruption, albumen is found in the urine. Quinine is to be given internally, and solution of caustic potash (3j ad lb.j) to be rubbed in externally. *Ephidrosis*.—A case of profuse sweating of the head and neck during eating was improved by the use of sage tea with acids, and rubbing with Spirit. Camphoræ and vinegar. *Acne rosacea* is almost always hereditary, in the author's experience it is rarely produced by chronic disorders of the stomach, and never by alcoholic excess, over-eating, or want of cleanliness. *Acne tuberculata* is treated by hard rubbing of the infiltrated parts with small brushes dipped in green soap, followed by lotions of Sodæ Carb., borax, Tr. Benzoës, sulphur suspended in spirit. *Seborrhœa* occurred in eight

cases; in one the whole scalp was covered with a brownish secretion, like ear-wax. *Sycosis* is described as dependent on inflammation and suppuration of the hair-follicles, and not as a parasitic disease. Extraction of the hairs is necessary, and subsequently applications are to be made of solutions of Hydr. Bichl., Pot. Iod., or spirit of tar, according as the skin is morbidly reddened, or indurated, or covered with scales. Fatty and oily substances are generally injurious, but glycerine and yolk of egg are beneficial. *Alopecia* was never found to depend on the development of fungi about the roots of the hairs. Its remote causes appeared to be—exanthemata in four cases, disorders of menstruation in three, erysipelas of the head in one. As remedies, various stimulating drugs are recommended—Sulph. Iod. with Peruvian balsam, biniodide of mercury with Tr. Lyttæ, frictions with green soap, vapour douches, &c. Of *lupus*, fifty-seven cases were treated. The disease consists in the development of degenerate yellowish cells, occupying the tissue of the cutis and the subjacent connective. In *lupus non-exedens* these cells simply cause an atrophy of this tissue; in *lupus hypertrophicus* they form knotty growths, covered with crusts and scales; in *lupus exulcerans* they break up, and destroy the parts where they are deposited. The use of caustics, especially of chloride of zinc, is essential. The morbid tissue is converted by these into a black slough, which is thrown off in six or eight days, after which the cauterization is repeated. A spirituous solution of the chloride may be used for l. superf. and l. exulcer.; but in l. hypertroph. the solid form is better, or Potassa fusa. *Lupus erythematosus* begins with red, somewhat infiltrated, and itching spots, which either form sebaceous crusts or give rise to a transformation of the epidermis into a horny or shagreen-like structure. Its treatment is the same as that of *lupus*. *Ephelides*.—Two very marked cases were improved by friction of green soap, followed by a pomade consisting of camphor, solution of Pot. Carb., and milk of sulphur. *Melasma* is cured by vesicants which remove the epidermis. As to *syphilitic* skin diseases, the author says there are no characteristic signs, but the absence of itching, the swelling of the glands, the rapid supervention, the colour, and the localization, as well as the history of infection make the diagnosis pretty certain. These eruptions are most obstinate when they occur in scrofulous, gouty, or tuberculous individuals. In ten cases out of fifty-two the constitutional disease appeared to have originated in an obstinate gonorrhœa rather than in a chancre. The time from the infection to the origin of the indurated chancre varied from twenty-four to thirty-six days; that from the appearance of the chancre to that of the syphilide from sixteen days to twenty-three years.

ULMER, L.—Wien. Med. Halle, iii, 5, 1862. Schmidt's Jahrb., vol. 119, p. 182.

Records a case of pemphigus acutus, a disorder so rare that but one case has been met with among 300,000 cases of skin disease. It is characterised by severe, almost typhous fever, a copious and spreading eruption of vesicles, and non-recurrence after recovery. H. Hertz records a case of pemphig. chronic. attended with amyloid degeneration of the liver and spleen.

THORNAU, A.—Hospit. Tidende, 8, 1863. Schmidt's Jahrb., vol. 120, p. 43.

Records two cases of phlegmon of the skin of the face ending in fatal pyæmia.

OGLE, J. W., M.D.—Med.-Chir. Trans., vol. xlv, p. 217.

Records two cases of ichthyosis sebacea occurring in two sisters, æt. 10 and 14, in good general health. The disorder supervened on some unhealthy sores, which occurred after vaccination. On admission into the hospital they presented the following appearances. Large patches of the skin on the front of the chest immediately above the axillæ, as also on both sides of the trunk over the false ribs, and about both knees, as also down both legs (especially in the neighbourhood of the ankles) as well as on the dorsum of the feet, were of a brown colour, so dark as in some parts to be almost black. These discoloured portions were very rough and indurated, owing to masses of dry material covering the surface of the skin, which had the appearance, in consequence of the movement of the parts, of having become broken into scales or small tabular or lozenge-shaped patches, chiefly of a square form, and divided by deep lines, according to the natural creasings of the skin. Owing to these concretions, the surface was extremely dry and harsh. Down the legs and arms the concretion had less of a scaly form, and more of a papillary character. In some parts at the sides of the knees the affected portions reminded one of the dried and roughened sole of the fowl's foot. By daily warm baths, and inunction first of lard, and subsequently of diluted liquor potassæ, the whole of the morbid sebaceous matter was removed, and the patients were discharged quite free from the affection in about five weeks. It recurred, however, in about three and a half months, exactly in the same parts as were before attacked. The sebaceous matter contained a large proportion of fat, an albuminous substance, and various salts. Under the microscope there were found remains of numerous epithelial cells, besides a number of mainly round and oval, reddish-coloured, solid-looking bodies, of crystalline appearance.

PEACOCK, T. B.—*Notes on Hospitals in Northern Italy, and on Pellogra.* Brit. and For. Med.-Chir. Rev., Jan.

Peacock describes the disease as presenting three stages:—(1) It usually appears in the spring, with a slight febrile attack, which is followed after two or three days by an eruption of red spots, or of erythema on the backs of the hands and the front and top of the chest, and on the feet and ankles. There is usually also some disorder of the digestive organs, especially diarrhoea, and vertigo or headache, at the time; and the affection subsides and passes off with desquamation after a longer or shorter period, usually at the commencement of summer. Generally, however, the disease returns with greater severity the following spring; and so, after successive relapses and recoveries, fixes itself in the system. (2) In the second stage all the symptoms are more severe and more persistent. The skin affection is no longer a mere redness followed by desquamation, but the epidermis becomes dark and thickened, and has a tendency to exfoliate, leaving under it a peculiarly thin and transparent cuticle; oc-

casionally also there are vesicles, pustules, or fissures on the affected parts, from which secretions exude, and, becoming dry, form crusts. The gastro-intestinal symptoms are more marked—there is a morbidly acute appetite, a red and fissured but not generally coated tongue, and the bowels are much relaxed. There is pain down the course of the spine and in the limbs. The nervous power also is impaired, so that there are tremor of the extremities, with headache and vertigo, a very desponding state of mind, and not unfrequently delirium, together with emaciation and weakness. (3) In the third stage the affection becomes persistent. The skin may either display the thick and dark epidermis, or there may be fissures and crusts, or the eruption may have entirely disappeared, leaving no trace but the thin and transparent cuticle. The patient's strength is now very greatly exhausted, and he is thin and sallow. The appetite is generally voracious; he has constant diarrhoea, suffers from excessive despondency or maniacal excitement, and ultimately sinks into a fatuous condition. There is increased tremulousness of the extremities, with more or less complete loss of the power of movement. Ultimately the powers of deglutition and of speech may be affected, and usually he has impairment of common sensation or of sight. In this way he more rapidly or more gradually sinks, death being sometimes preceded by dropsical effusions into the large cavities, or by convulsions, and too frequently accelerated by suicide. Of 310 cases admitted into San Servolo at Venice, in the five years terminating 1861, eighty-two were cases of mania, two of monomania, ninety-five of melancholia, and 130 of dementia. The general paralysis which attends the last periods of the disease is identical in its symptoms and morbid appearances with that of the insane. The duration of the disease varies greatly, but is usually two to three years, and often much longer, even for sixty years. Pellagra is essentially a disease of the rural districts. Ballardini found in 1856, that of the whole number in the Milanese provinces, 89.5 per cent. were peasants, 7.7 were artisans, and 3.6 followed other occupations. The disease is non-contagious, but is generally regarded as hereditary. Calderini states that of 184 families, comprising 1319 individuals, inheriting predisposition to the disease, 648 were affected, and 671 were healthy; and it is supposed the mother more generally conveys the disease than the father. The disease affects both sexes and all ages, especially the years from thirty to sixty. Death often occurs from marasmus, and it is stated that there are then usually no evidences of disease in the intestinal tunics, beyond some redness or congestion and a peculiar thinning of the mucous membrane. Death is also frequently the result of the cerebro-spinal affection, and effusions of serum beneath the arachnoid, in the ventricles, or into the spinal canal, with softening of the brain or spinal cord, are then usually detected. Phthisis and scrofula do not appear to be at all prevalent among the pellagrose, nor does renal disease seem to occur. The frequency of the disease varies greatly in different districts, in Brescia amounting to 34.3 per 1000, in Sondrio forming only 0.3 per 1000, of the population. Of the whole number of cases, 29,476 were cured, or 78.3 per cent., while 5657 remained uncured, or 15.4 per cent.; 3390, or 9 per cent., had mental affections connected with the disease; 110, or 0.29 per cent., committed suicide; and 2385, or 6.3 per cent., died naturally.

The rate of mortality varied greatly in different districts, from 3.43 in the province of Mantua to 47.85 in Sondrio. As to the causes of the disease, neither poverty and misery, nor malaria, nor exposure to the rays of the sun, nor peculiarities of soil and climate, nor the character of the water drunk, the habits of the peasantry, or the construction of their dwellings, afford any satisfactory explanation of the existence of the disease, although some of them, by deteriorating the general power of the inhabitants, must powerfully predispose them to suffer from any morbid cause, and impart to disease developed under such circumstances a peculiarly intractable character. The opinion more generally received in Italy at the present day is that the pellagrose malady is connected with the use almost exclusively, as an article of food, of the maize or Indian corn, upon which, in the form of polenta (or the flour mixed with hot water, and boiled until nearly solid,) the peasants chiefly live. From the Sardinian report it appears that of 626 pellagrose persons, 522 lived upon scarcely any other food than maize, and 104 took it, though not exclusively. It is a commonly received opinion that it is the deficiency of nutriment, and especially of the azotized elements, in the Indian corn, which causes the disease, but this does not seem to be the case. In the southern districts of Italy, in Sardinia, and in Burgundy, the grain is extensively or almost exclusively used as an article of food, without producing injurious effects. We know, too, that in India large numbers of the population live exclusively upon rice (containing a smaller proportion of azotized matter,) and on vegetable food, without suffering from any similar disease. It is therefore probable that it is not the absence of nutriment which produces the disease, but some change which it occasionally undergoes, either during growth or after being harvested. The subject has been carefully investigated by M. Ballardini in Italy and M. Costellet in France, and they conclude that the disease is due to changes in the grain from imperfect drying after being gathered. It is stated that when the maize is cultivated in climates from their dampness and coldness not altogether suited to it, it cannot be fully ripened, and when placed in the granaries, without being previously dried artificially, becomes affected by a parasitic growth. Ballardini states that this appears in the oblong groove, covered by a very fine epidermis, which corresponds to the germ, and beneath this is seen a greenish powdery matter. Under the microscope it appears to consist of small globules, perfectly round, diaphanous, and without sporidiales internally. This view, if correct, explains the circumstances mentioned above, as also the ascertained fact of the greater prevalence of pellagra in cold and damp seasons, and the occasional occurrence of a similar form of disease, as shown by MM. Roussel and Landouzy—in those who have not fed upon maize. The preventive measures recommended are—(1) improvements in the cultivation of the soil, so as to secure the more perfect growth of the maize. (2) Drying the grain in the kilns as soon as it is reaped. (3) Lessening the proportion of vegetable food, and of this grain in particular, in the diet. As curative means, quinine and iron, good animal food and wine, are most beneficial. Antiphlogistic treatment is highly injurious. Baths, sulphurous and others, have been found useful for the skin affection.

In the 'Journal de Méd. et de Chir. pratiq.,' June, 1863, p. 274,

there is a note from M. Landouzy, stating that the endemic pellagrous affections of Spain are absolutely identical with those of the Landes (French) district, and those of Italy, and with the sporadic pellagrous diseases of France. The endemic pellagra of Aragon, where crops of excellent cereals are grown, and not a grain of maize is eaten, is absolutely identical with the endemic pellagra of Asturias, where maize forms the staple of the food.

CARTER, H. V., M.D. Lond.—*On Leprosy, as seen in India; with remarks on the eruption and anæsthesia.* Brit. and For. Med.-Chir. Rev., Jan., 1863.

During the last twelve years 543 deaths from leprosy have been registered in Bombay; of which 409 were males, 134 females. The frequency of the disease in the class concerned in catching and selling fish is very remarkable, especially as this class contributes but in a trifling proportion to the general mortality. Leprosy presents three phases—(1) an eruption or affection of the skin accompanied with anæsthesia, and probably allied to lepra (Græcorum); (2) an affection of the cutaneous nerves and superficially placed nerve-trunks, and of the Pacinian corpuscles; (3) a tumefaction or tubercular thickening of the skin, and the mucous membrane of the palate and pharynx. These primary symptoms, seldom, if ever, occur quite independently; but in all cases one or other will be found to predominate, and to determine the variety or form the disease has assumed, which, however, may change as time advances. (1) Of the *eruption*.—Carter distinguishes four varieties—(1) the typical, consisting of circular or annular patches, from three quarters of an inch to four inches in diameter with edges raised, of a light-red or pinkish hue, free from scales, cracked or wrinkled; centre depressed, pale, dry, glistening; they tend to join and cover large spaces. The raised margin is slightly benumbed; the centre of the patches insensible; often entirely so, and always in the older ones. No preceding signs of irritation. The arrangement is more or less perfectly symmetrical. The shoulders, hips, elbows, knees, arm, thigh, forearm and leg, temples, cheeks, and back, are the sites mostly affected. The general health and bodily condition are good. (2) The second form consists of extensive patches occupying the back of the trunk, limbs, &c., often so large as to embrace considerable segments of the trunk or to surround a limb like a broad bandage. The margin is two or three inches broad, elevated, and of a light red; the centre depressed and benumbed, dry, pale, or of a darker tint. In both (1 and 2) anæsthetic leprosy generally coexists. These forms of eruption may be seen at the end of one year, or not fully developed until three or four. (3) The third form is more frequent, and consists in a light discoloured state of the skin, in the form of irregular, often large patches, of which the surface presents hardly any other visible change than that of colour. The tubercular character is reduced to a minimum, and the border is indicated by a narrow, level, and reddish line, or by a level, lighter-coloured streak, the central parts having resumed a more or less natural tint, but remaining insensible. (4) The fourth form consists of numerous round, pale-white spots, whitest in the centres, markedly anæsthetic, from which the cuticle tends to peel off. The surface of the patches presents a rather

coarse appearance, the clogged hair-follicles being visible as elongated dots; most of the hairs are white, thin, and short. In some cases of leprosy there is extensive blanching of the skin, apparently depending on non-formation of the cutaneous pigment. In others there is an opposite condition, viz., a black discoloration. There is no evident connection between the various forms of eruption described above, and a syphilitic taint. Carter is disposed to regard them as allied to the European squamous disease, lepra. The local preferences, he remarks, and the symmetrical arrangement of each are points of accordance. (II) *Anæsthetic leprosy*.—Impairment or loss of the tactile sense is the characteristic feature of this phase of the disease; this, when complete, prevents appreciation of temperature or other kinds of irritation. In most cases only the limbs, and particularly their extremities, are affected; next in frequency the lobules of the ears and parts of the face, but rarely the trunk. This very remarkable symptom, standing alone as it does, is so far peculiar to leprosy, and the morbid anatomical condition on which it depends is also equally unique. Careful dissection and microscopic investigation has shown that the nerve-trunks alone are primarily diseased, no other tissue in the limb showing traces of change, except as the result of this, and the nervous centres themselves, and the nerve-trunks of healthy parts, remaining unaffected. The result of the loss of sensory nervous influence is remarkable, atrophy and interstitial absorption, take place, leading at length to the total loss of the hands and feet. As to the *comparative frequency* of anæsthetic leprosy, it was found that of 173 cases 60 belonged to this form, 30 to the mixed variety with the tubercular, and 47 to a combination with baras (the first form). As to the *age*, when the symptoms commence, it appears that of 60 cases they were observed in more than half under the age of 30, in many under 20, in comparatively few under 40. *Sex*.—Males suffer much more frequently than females, and the same is the case with tubercular leprosy, hardly so with baras. As to *occupation*, several were fishermen, many ryots; all live more or less on dried or salt fish and rice. The *duration* of the disease varies according to its intensity, from three to thirty years and upwards. The natural mode of *termination* does not appear to be uniform; generally some exhausting disease, often dysentery, carries off the patient, occasionally fever and albuminuria. Neither fever nor syphilitic taint is common, but an *hereditary predisposition* is undeniable; it was acknowledged in about twenty-three out of forty-eight cases of all kinds. The disease does not appear to be *contagious*. As to the *symptoms*, it has been stated that hyperæsthesia was common at the commencement of the disease, but Carter has never been able to discover it. Local sensations of a burning, pricking, or shooting pain, susceptibility to cold, &c., are not uncommon in the fingers and toes; and there may co-exist tenderness on pressure and shooting pains in the course of the ulnar and median nerves, these symptoms never extending upwards beyond the seat of lesion, and to this the local tenderness may be limited, *e. g.* just above the wrist, or less often at the bend of the elbow, for the median nerves, behind the inner condyle for the ulnar, and behind the inner malleolus for the posterior tibial. General aching, wearing pains in the limbs, are sometimes complained of; or a sense of weakness, the

patient being unable to grasp firmly, &c. Bullæ or blisters are frequent, particularly on the extremities. In most cases they appear to be the result of irritation, sometimes, however, they occur in a perfectly spontaneous manner. Deep ulcers by no means generally follow. In the course of a few months or longer the disease becomes confirmed; the extent and degree of anæsthesia show that the nerve-trunks are deeply implicated. The skin of the hands and feet becomes dry and shrivelled; the fingers and toes atrophied and bent; the wasting continues slowly, but surely, until the leper becomes a poor cripple; his general health, strength, and mental faculties, impaired, and the more so in proportion as he suffers from want and exposure. According to Carter's observation, there is rather a diminution than an increase of the sexual passion.

Morbid anatomy.—Fourteen autopsies have been made, eight of the anæsthetic, and six of the mixed form; disease has been found only in the kidneys and in the nervous system. The disease of the kidneys has been of the hypertrophous kind. With regard to the nervous system, in no case has the brain or spinal cord, or their membranes, been found diseased. The Pacchionian glands were in their usual state. The principal sympathetic ganglia in the trunk have always seemed healthy, and also those on the posterior roots of the spinal nerves; on two occasions the former were examined microscopically, and on two others the spinal cord and the ganglia, with the same results. The roots of the spinal nerves have always had a healthy appearance, and also the large nerves forming the various plexuses in the neck, abdomen, and pelvis. But those nerve-trunks distributed to the affected parts have invariably been found diseased; they are enlarged, of a reddish-gray colour, mottled or streaked in appearance, and of firm consistence, though supple; their investment of connective tissue, or neurilemma, is free from opacity or adhesion, so that there is commonly no evidence whatever of inflammation (if that process be limited to the neurilemma); although I have once found the ulnar nerve at the elbow of a pink colour, and adherent at one or two points, also the musculo-cutaneous and posterior-tibial nerves in a similar state, and therefore would not deny the occasional occurrence of appearances which may be regarded as evidences of inflammation of the nerve-sheath; but in these and in all other cases the funiculi, or separate nerve-strands, have presented one uniform change of structure; in the last-named instances it ought also to be mentioned that the foot was in a gangrenous state, and phlebitis was present, so that the nerves may have become implicated by continuity, and in the instance of the ulnar nerve it is possible that some local external injury may have induced adhesion at the place of infliction. The funiculi of the nerves are the seat of the morbid changes, the nerve-tubules of which they are formed are separated and compressed by the development of a clear nucleated tissue amongst them, and eventually so much altered as to be even wholly destroyed. These unique changes are fully described in the 'Trans. of the Path. Soc. of London,' vol. xiii, p. 13. The morbid lesion is confined, not only to cutaneous nerves, but to those nerves only after they have emerged from beneath the fascia and muscles which may have overlaid them in the first part of their course, so that the radial nerve, *e. g.*, becomes swollen just after passing beneath the tendon of the supinator longus muscle; so with

cutaneous branches of dorsal nerves I have found the dorsal branch of the ulnar alone diseased, and that only after it had escaped from beneath the tendon of the flexor carpi ulnaris. By examination with a low microscopic power, it is evident that sometimes only some of the tubules in a nerve-fasciculus may be affected. The following is a list of the nerves oftenest found diseased:—Supra-orbital, just after emerging from the orbit; auricularis magnis, just after turning round the sterno-mastoid muscle; ulnar nerve, at the bend of the elbow, sometimes in the hand, at the wrist; median nerve, just above the wrist, sometimes at the bend of the elbow; radial nerve, as above mentioned; external and internal cutaneous, and intercosto-humeral, after perforating the fascia of the arm; dorsal branch of ulnar, as above mentioned. The branches of the lumbar plexus are not frequently diseased, except the internal saphenous, in the leg and on the foot. Of the sacral plexus, the following:—Musculo-cutaneous, after perforating the fascia of the leg; posterior-tibial, behind the inner ankle. The external saphenous and anterior tibial should also be mentioned. It should also be remarked that the terminal branches of these nerves are generally found atrophied, and of a transparent, whitish aspect; at this stage it is hardly possible to say whether they were not diseased previously to the larger trunks, or whether this wasting is only a part of the general decay which supervenes in all the tissues, as presently to be described. Those appendages to the nerves, the Pacinian corpuscles, are occasionally found to be diseased; thus they have been seen in the hands, feet, and abdomen. In a dissected hand the great nerve-trunks were also affected in the usual way; the corpuscles seemed very numerous, and some were much enlarged, but clear; the central nerve-fibre, however, was either small or absent; others were occupied in their central part by a copious granular deposit, and this is probably the early stage; the capillaries were evident and healthy. *Physiological remarks.*—In numerous cases, all noted by myself, it has been possible to clearly ascertain that certain changes in the hands and feet were connected with disease of the nerve or nerves supplying the affected parts; in about twelve cases of a particularly satisfactory kind the following were noticed:—For simplicity's sake, I will instance the inner side of the palm and dorsum and the two inner fingers of the hand, with a detected enlargement, often tenderness of the ulnar nerve at the elbow, and no other local symptom whatever. First, the benumbed skin shows evidences of atrophy, shrivelling or wrinkling, dryness; desquamation of the cuticle sometimes; a reddish or purplish hue, and a decided diminution of temperature; the whole giving the impression of a dry wasting or mummifying process, with sometimes the idea of a subjacent effusion of reddened serum. The fingers look thinner, and in slender subjects smoother, with a tendency to assume and finally retain a bent position; the inner margin of the palm becomes concave; the interosseous spaces hollowed, particularly the first (which is occupied by the adductor pollicis muscle, supplied by the ulnar nerve); the whole hand is weak, and the thumb droops. Interstitial absorption proceeding, the phalanges of the little finger shorten, beginning with the terminal one; eventually no traces may remain of it and of the next finger, which becomes wasted, bent, and shortened, although at such advanced stages it is not common to see the disease thus limited, for the

median nerve has generally ere this become implicated. In the early stage bullæ may appear on the sides or tip of the fingers, filled with dark-coloured serum; the concentric lines on the cuticle disappear, owing, doubtless, to the absorption of the subjacent rows of papillæ, and a finely wrinkled, but especially smooth, surface is left; the sweat-glands, becoming affected, cease to act. The phalangeal bones are strikingly altered; absorption first renders the shaft very slender about the middle, then the head disappears, and the base remains as a curious conical piece. A general diminution in the size of the bones of the hand and feet has been seen, and even the metatarsal or metacarpal bones may be destroyed, as well as the adjoining row of short bones, so that nothing but a bare stump remains." The author is decidedly of opinion that the atrophy is the result of anæsthesia, but does not consider it fully made out how much is owing to irritation from without, and how much to the loss of the nervous influence. Experiments upon animals go to prove that the former is most influential.

BARNES, R., M.D.—*On the Fallacies of the Statistical Method as applied to Medicine.* Med. Tim. and Gaz., Nov. 14th and 28th.

Barnes remarks that if we could be sure that we were adding and comparing like things, we might have confidence in the results of the above method. But it is almost impossible to obtain such materials. He points out various instances where, under some general apparently accurate statement, a number of fallacies are concealed, which direct medical observation alone can detect. One example is as follows:—The returns show that 67 per cent. of the registered births are vaccinated, it is therefore concluded that 33 per cent. are unprotected. But by no means all the births are registered; many vaccinations are not registered at all; many children perish before they are old enough to be vaccinated; many vaccinations presumed successful are imperfect. Barnes demurs altogether to the assumption that the errors here enumerated can counter-balance each other so that the ultimate result shall at all approach to accuracy. He maintains that pneumonia is more frequently a symptom or manifestation of some kind of blood disease or fever than a simple local phlegmasia. Bronchitis and pneumonia occurring during the first few days of childbirth are commonly nothing more or less than manifestations of puerperal fever, yet the terms are commonly employed when describing the cause of death in quite a different sense. In fact, pneumonia instead of being, as assumed, the most uniform and homogeneous disease, is utterly multiform, and consequently the deductions drawn from the results of various cases grouped together must be unreliable. With respect to the influence of consanguinity in marriages in producing certain forms of disease or physical degeneration, statistics are used with great force both by those who affirm and those who deny its effect. This, of course, proves fundamental differences in the observations. The truth is, that the conditions involved are so numerous and complicated as to defy the extrication and isolation of the one circumstance—consanguinity. Discoveries are made in medicine, as in natural history, by sagacity in detecting the relations of things, by patient observation and questioning of nature. "Non numerandæ, sed perpendendæ, sunt observationes."

REPORT ON SURGERY.

BY

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Treatises and collections of cases.—In addition to further portions of works already quoted in former reports, we have to notice ‘*Outlines of Surgery*,’ by F. Le Gros Clark, and ‘*Lectures on Surgery*,’ by W. Lawrence; the surgery of Maître Jean Ypermans, the father of Flemish surgery, edited by J. Carolus (pp. 191, Gand); the collected works of M. Burggraëve (6 vols. and atlas, Gand); the ‘*Clinique Chirurgicale*’ of J. G. Maisonneuve (2 vols., Paris); and a new edition, the fourth, of W. Roser’s well-known ‘*Handbook of Anatomical Surgery*’ (Tübingen, Laupp).

Surgical Pathology.—A new edition, with many additions, of J. Paget’s ‘*Lectures on Surgical Pathology*’ (London, Longman).

Surgical Anatomy.—The third edition of the ‘*Chirurgico-Anatomical Vade-Mecum*,’ by W. Roser (pp. 284, Stuttg., Ebner and Seubert).

Military Surgery.—A treatise by L. Legouest (pp. 1000, Paris, J. B. Baillière), and an account of the African campaigns, by A. Bertherand (Paris, 1862).

Introduction of air into the veins.—M. Oré has recently experimented on this subject (‘*Gaz. Hebdomadaire*,’ 1863, p. 33). He found, that, though an animal is inevitably killed by the introduction of a given quantity of atmospheric air, an equal and even greater amount of nitrogen, of hydrogen, or of carbonic acid, may be injected with impunity into another animal of the same weight and race. Oxygen may be introduced in almost any amount. An animal which would have been unable to bear 80 cubic centimetres of air scarcely suffered from the introduction of 300 cubic centimetres of oxygen. Death may be prevented by the use of electrical currents in such a way as to provoke energetic respiratory movements, even when a quantity of air is injected otherwise sufficient to at once destroy the animal. The author attri-

butes death partly to distension of the right side of the heart, partly to paralysis of the muscular tissue of that organ, caused, as he supposes, by a sedative action of the air; he employs electrical irritation of the pneumogastries, with the view of preventing the latter effect, imagining that dilatation of the chest would to some extent remove the air from the heart. A. Mercier (*ib.*, p. 321) does not admit this explanation; the *vis a tergo* necessary to drive in the air with sufficient force to cause mechanical distension of the heart does not exist; and as to the idea of a paralysis caused by the air, it is well known that the heart of an animal will beat for a considerable period after its removal from the chest. Mercier published in 1837 and 1838 ('Gaz. Méd.'), and has since repeated, an explanation which appears to agree better with the facts. Death from the injection of air or any other gas occurs with rapidity, because the pulmonary circulation is interrupted, because the brain is not supplied with blood; indeed, the condition is just such as would be induced by a prolonged syncope. This interruption occurs, not because the heart is distended or unable to contract, but because the frothy mixture on which it acts does not obey its efforts, but passes with great difficulty, or not at all, through the capillaries of the pulmonary artery. Such a difficulty, indeed, results, first, because the gaseous molecules have little affinity for the walls of the capillaries. It is a fact perfectly established in physical science that the passage of a liquid through very delicate tubes is rendered more difficult by its mixture with a gas. Secondly, because the impulse caused by the contraction of the heart is only very partially transmitted to the more remote ramifications of the pulmonary artery, owing to the compressibility and elasticity of the gas. Thirdly, because at the moment of a contraction, the valves are not so exactly closed by a gas as by an incompressible liquid; and for that very reason a reflux takes place with greater ease from the ventricle into the auricle, and from the latter into the veins. The author has found in the inferior vena cava air which had entered spontaneously by the superior. It is also possible that the viscous condition of the blood is increased or diminished by particular gases. In accordance with his theory, he considers that if death takes place, as in a prolonged syncope, because the brain is too long without the necessary amount of blood, it would, perhaps, be possible to delay this termination till the heart could liberate itself, provided the whole of what little blood passes through the left side of the heart, notwithstanding the obstruction, could be carried to the brain. For this purpose he recommends—(1) to keep the head low: the experiments related in Bouillaud's report prove, indeed, that animals die with greater rapidity when the head is elevated. (2) To compress the axillary arteries and the abdominal aorta, or in case of need, the femorals. A dog, into whose heart he had passed a considerable quantity of air, passed four times from death to life, and from life to death, according as he pressed or not on the aorta (one axillary artery had been 'ligatured'); it ultimately recovered ('Gaz. Méd.,' 1838). He considers that electricity facilitates the circulation in the lungs, and should therefore be used when at hand.

Instruments.—J. Weiss and Son. A catalogue of surgical instruments,

apparatus, appliances, &c. (London, 1863, 53 plates, and explanatory text). J. Leiter, atlas and priced catalogue of surgical instruments, &c. (Wien, W. Braumüller).

The elastic ligature.—At the suggestion of Trousseau, A. Richard has experimented with india-rubber threads. He describes the effects produced on a tumour by strangling its base with such a ligature: on the first day there is no change; during the second and third the temperature gradually sinks, the skin becomes a little flabby, and its colour somewhat duller. These symptoms become more distinct on the following days: the mass diminishes, becomes wrinkled and dry; it separates from the fifteenth to the twenty-fifth day, without interference, without pain, without inflammation, without the patient perceiving it. Such is the course of dry gangrene. During all this time the furrow, which separates the dead from the living, remains hidden by the ligature; it is much as if the wound were subcutaneous. Reparation is almost complete when the tumour falls. He considers the process innocent, painful only just after its application, and of easy use; it seems to him likely to replace all methods of ligature previously known. ('Gaz. Hebdomadaire,' 1863, p. 418.)

MATERIA CHIRURGICA AND THE MEDICAL TREATMENT OF SURGICAL CASES.

Disinfectants.—A. Chevallier has published a special treatise on this subject (Paris, P. Asselin). O. Reveil ('Arch. Gén.,' 1863, i, 5, 152) is convinced that the sulphate of lime in bones, when transformed into sulphuret of calcium during decomposition, is the principal, if not the only, cause of the fetid odour emitted in cases of necrosis. He states that in decomposition the ternary compounds—the fats, sugars, and starches—mostly furnish acid products, which are very little odorous; the nitrogenous bodies produce alkaline ammoniacal compounds, which are extremely offensive. He is of opinion that, to keep a wound in good condition, its secretion must be retained slightly alkaline, or at all events neutral.

Putrefaction and fermentation are closely allied; all agents which impede fermentation equally impede putrefaction. Certain conditions must coincide before fermentation can take place; such are (1) a ferment; (2) a fermentable matter; (3) water; (4) air; (5) a certain temperature. The products of fermentation vary in accordance with the nature of the ferment and that of the fermentable matters, and also in accordance with variations in the external conditions, in the air, water, and temperature. Thus sugar, which may be taken as a type of fermentable matter, may, according to the conditions, undergo the alcoholic, the lactic, the butyric, or the viscous fermentation. In the animal economy the fermentable material is almost always the same, and the moisture and temperature invariable; but the ferments and the access of air are variable; and thus it may be imagined how different may be the products of putrefaction. It would be premature to attempt to trace the very different and numerous reactions which in their totality constitute putrefaction; the products of these decompositions are

infinitely various. All that can be said is, that there are many kinds of putrid fermentation, and that thus it would be as useless to seek for a general disinfectant, which would act equally well in all cases, as to hunt after a universal remedy.

Disinfecting agents should—(1) destroy unpleasant odours; (2) promote cicatrization; (3) check the formation of pus, or change it from bad to healthy; (4) especially and beyond all else, destroy miasms and emanations. The author has examined the air of rooms containing cases of measles and variola, and found gaseous organic matters which strongly reduced the permanganate of potash. However, the experiments of Gaspard have shown that men and animals can become acclimatised in pestilential spots; and that where the man who has become accustomed to such exhalations can live, a new comer is rapidly attacked; the experiments of M. Bernard have proved the same thing of poisonous gases administered in small amounts. The author describes experiments which he has made with nearly all the agents recently recommended as disinfectants. Chlorine, bromine, and iodine, are the most typical disinfectants; they decompose the various products of putrefaction, such as sulphuretted hydrogen or the sulphurets, ammonia, phosphoretted hydrogen, various organic matters, owing to their affinity for hydrogen; they act as detergents, giving tone to the tissues and stimulating the vitality of the organs; they annihilate the action of venoms, of viruses, of putrefying matters, of all morbid products the introduction of which into the animal economy might become the source of fatal disorders. M. Reynoso showed in 1855 that bromine and iodine destroyed the poisonous property of curare. Guided by these experiments, the author has experimented on pus from infecting chancres, on putrefying matters, on vaccine virus, and has always found the poisonous or special properties of these different products destroyed; the experiments were made on men with the vaccine matter and syphilitic virus, and on animals with pus and putrefying substances. Bromine appears to be more energetic than iodine; but its odour is more unpleasant, its price is higher, and its action more irritating.

He employs two compound iodine solutions—the one a weak solution, in acute inflammations, or where much irritation should be avoided—the second, a strong one, in atonic and languid wounds. The weak solution is composed of—

Tincture of iodine	.	.	5 grammes (gr. 77, about β i m xx).
Iodide of potassium	.	.	5 " („ 77).
Water	.	.	1 litre (2'1 pints).
Nitro-benzine	.	.	20 drops.

The strong solution contains—

Tincture of iodine	.	.	20 grammes (about β v m xx).
Iodide of potassium	.	.	10 "
Water	.	.	1 litre.
Nitro-benzine	.	.	20 drops.

A child, aged five and a half years, was affected with a most fetid gangrene of the mouth. Various disinfectants, such as compounds of coal-tar, carbon, the hypochlorites, were employed without success; the patient had to be placed in a separate ward. The weak solution, diluted

with an equal amount of water, was introduced into the mouth thrice a day, and compresses wet with the strong solution were applied to the external wound; in two hours the smell had disappeared; so long as the dressings were kept moist, the disagreeable odour could scarcely be perceived, that of the nitro-benzine being predominant. This treatment, continued for forty-eight hours, allowed the nurses to approach the patient, which they had been unwilling to do before. The child died; the external applications were continued in the dead-house, and the offensive odour did not return. The weak solution, used as an injection in a case of fetid discharge from the vulva, completely removed the odour.

The hypochlorites are undoubtedly excellent disinfectants, acting, as they do, on the volatile products of putrefaction and on the wounded surface; on the other hand, their disagreeable odour annoys the patient, they often irritate, and appear in some cases to increase, rather than to diminish, the suppuration. The author has found the method of M. Hervieux ('Year-book' for 1862, p. 203) successful in a great number of cases; he saw it employed by its originator in a case of recto-vaginal fistula; it acted efficiently as a disinfectant, and cicatrization soon ensued. He found, however, its action on scrofulous wounds so irritating that he had to abandon its use. Nevertheless the hypochlorites will be always *the best of all means* for disinfecting the vicinity of a patient, owing to the volatile nature of their active constituent. The disagreeable odour of chlorine may be completely masked by adding, immediately before its use, ten to fifteen drops of nitro-benzine to a litre (2·1 Engl. pints) of the liquid hypochlorite. The constitutional treatment is of great importance in all unhealthy wounds; wine, quinine, and preparations of iron, must be freely used.

Dr. Boinet ('Gaz. Hebdomadaire,' 1862, pp. 626, 644, 708) considers that fetidity or putrid fermentation of purulent secretions is only one of the causes which impede the cicatrization of wounds. A medicament which would simply remove the unpleasant odour would be of little value, compared with one which would modify the wound and prevent the secretion of unhealthy pus; to promote cicatrization, it must act on both the pus and the secreting surface. The ancients made use of numerous detergents, such as various irritants, caustics, the actual cautery, all of which acted more or less efficiently as disinfectants. In 1859 Velpeau, in the name of MM. Corne and Demeaux, described as marvellous the effects of coal-tar and plaster of Paris on unhealthy wounds. Later experience, however, has shown that this powder is rather an absorbent than a veritable disinfectant, masking the odour rather than destroying it. As the powder was removed with difficulty from a wound, was unpleasantly heavy, required frequent renewal, even five or six times a day, and dirtied the linen, it was soon abandoned. According to M. Renault, neither animal nor vegetable charcoal has any disinfecting power. Perchloride of iron has proved of use in hospital gangrene and purulent infection; its liquid form renders it of ready application; it disinfects fetid wounds; it decomposes sulphurous and ammoniacal gases; it destroys, or rather diminishes, the pulpy secretion with which the wound is covered; and it stimulates the tissues without exciting inflammation.

Dr. Rodet (of Lyons) has found so much benefit from a mixture of citric acid and perchloride of iron in both simple and indurated chancre, that he believes it will destroy, not only the syphilitic virus, but all other poisons of animal origin, the vaccine virus, that of hydrophobia, of glanders, of wounds from serpents, or in dissecting. The objections to the use of the perchloride are that it causes much pain, that it acts violently on the diseased tissues, and that it spoils the dressings. By far the best application to wounds is iodine; it immediately removes any foul smell, changes fetid or sanious into laudable pus, stimulates the secreting surface, promotes cicatrization, and destroys the contagious property of secretions: its action on the surface of a wound is powerful and rapid. The author concludes with some remarks on the importance of appropriate diet and general treatment.*

M. Demarquay has imported into France the use of permanganate of potash ('Gaz. des Hôp.,' 1863, 110, 257, 315). The solution used by him contains two grammes of the permanganate to 1000 grammes of water, and has answered admirably in cases of cutaneous and uterine cancer, of deep abscesses, of wounds, of ozæna, of fetid perspiration from the feet, and to remove the odour of the hands after post-mortem examinations. According to the experiments of M. Sicard, it is a most efficient preventive of the putrid fermentation of pus. Its advantages are that it can be readily applied, that it does not irritate the wound, that it does not soil or burn the dressings, and that it is cheap in price.

Subcutaneous injection of morphia after operation, before restoration of consciousness after chloroform ('Lancet,' 1863, i, 148).—Mr. Paget, in a case of amputation, after dressing the stump, injected a solution of a third of a grain of morphia, with the view of inducing freedom from pain, and some refreshing sleep after a return to consciousness. This practice has been in use for some time at the Middlesex Hospital, and has afforded much comfort, especially after important and painful operations. From a quarter to a third of a grain, or even half a grain of morphia, may be employed according to circumstances.

E. S. F. Arnold urges the use of opium in managing the shock and reaction of surgical injuries ('Amer. Med. Times,' 1863, i, 231). According to him, administered after severe operations, it both rouses the energies of the prostrated system, restores and controls the circulation, soothes pain, allays irritation, and thus places the patient in the best

* Iodine may also be employed as a vapour. G. H. Hoffmann gives the following description of a plan ('Brit. Med. Journ.,' 1861, ii, 201), "which has contributed much towards the comfort of the patients in the wards, and has had the effect, in several instances, of preventing the spread of 'sloughing ulceration,' which is sometimes imported into the hospital. The discharges from strumous wounds are often very offensive, poisoning the air, even for the patient himself. Condy's fluid, solution of permanganate of potash, forms an admirable lotion, as it does not irritate the surface of wounds when dilute; but it must be renewed frequently. Offensive emanations will occur during the night. We may prevent these from extending to the harm of the patient and his neighbours by placing under the bed-clothes, and again under the beds, boxes with pervious lids, and containing a little iodine. The iodine vapour decomposes the gaseous compounds of hydrogen; and the hydriodic acid resulting is not prejudicial to the patient, like the analogous compounds of chlorine." ("On the Disinfection of Rooms, Clothing, Drains, &c.," 'Third Report of the Medical Officer of the Privy Council,' p. 39.)

possible condition for recovery, as well as for the exertion of the necessary reparative process. A certain reduced and debilitated or exsanguine condition appears to be necessary for the safe administration of the drug in full doses; in proportion as reaction or inflammation have actually advanced, it will be necessary to be more careful of its dangerous effects being developed in the form of congestion or even narcotism. "In a case attended by Dr. Robert Nelson many years ago, in Canada, a gentleman had been wounded in a duel. The ball struck the posterior third of the crest of the right ilium, fractured that bone, and entered the body of the last lumbar vertebra, where it was found some eighteen years after. On the third night the agony of the patient was such as the doctor had never before seen, nor since; the bedstead trembled with his body; he breathed and spoke through his teeth, and perspired so much as to wet through a hair mattress. He entreated for relief of any kind, even called for death. To this patient, at 8 p.m., forty drops of tinct. opium were given; at 9 p.m., $\bar{3}ij$; at 9.45, p.m., $\bar{3}ij$; at 10.30, p.m., $\bar{3}j$; at 12 p.m., $\bar{3}ss$; and between 3 and 4 a.m., $\bar{3}ss$; in all, $\bar{3}xxiss$; when relief was obtained. I should add, he had been previously very freely bled. This large quantity of laudanum was taken with impunity and benefit. He subsequently took $\bar{3}ss$ -doses two or three times in the twenty-four hours, these producing and leaving behind no other symptoms than those of a moderate anodyne in ordinary cases of sickness; he gradually improved, and recovered. In the above case, of which only a short abstract is here given, we have the conditions necessary to establish a full tolerance of opium, viz., a system reduced by copious bleeding, and shattered by the severe and exhausting pain of a terrible injury, involving both sensitive and ganglionic nerves. We find that it was necessary to repeat the opiate in full doses, in order to keep the pain subdued, and such will mostly be necessary; but instances will sometimes occur when the pain, being once effectually subdued by opium, will not return, although the lesion that caused it remains. Before the soothing effect of the drug has worn off, the system appears to have become reconciled to the injury. May we not infer from such cases as the above that when, by shock, or hæmorrhage, or venesection, the necessary tolerance of opium has been established, that we may take the alleviation of pain as a safe guide for the extent to which it may be administered, giving it to any amount necessary to relieve pain, and no more—the cessation of the latter being evidence that the system has been thoroughly brought under its sedative influence?"

M. Demarquay on glycerine and its application to surgery and medicine (pp. 240, Paris, Asselin).—Glycerine is now preferred by many to fatty ointments as a local application, because the latter oxidize, become rancid, and irritate; whilst the former mixes with water and is unaffected by the air, and thus appears to possess all the advantages of a fat without its inconveniences. Dr. Tilt, on glycerine plasters ('Brit. Med. Journal,' 1863, i, 406). M. Bouillon, on the preparation of Canquoin's paste with glycerine ('Arch. Gén.,' 1863, i, 357). Prof. Schuh on the use of caustics ('Wien. Med. Halle,' 1863, p. 179, &c.),

E. Busch, on chromic acid ('Deutsche Klin.,' 1863, p. 1). MM. Perrin and Lallemand, treatise on surgical anaesthesia (Paris, Chamerot).

PLASTIC SURGERY.

The most important advance recently made has been the introduction of osteoplasty, of some of the more important applications of which we gave an account in the 'Year-book' for 1862. Dr. J. Wolff has published the first part of an elaborate essay on osteoplasty in its relations to surgery and physiology, in which he has collected all previous researches, and has further elucidated the subject by numerous well-planned experiments of his own ('Arch. f. Klin. Chir.,' iv, 183). His definition is, that "to osteoplasty belong all those bloody operations in which we implant bone or bone-producing tissue in some part of the body, with the view of causing a permanent existence of osseous tissue at that spot." He distributes the various operations of this kind into two groups:

A. The first includes those methods in which we insert bones or portions of bones in some part of the body, where they are intended to heal-in and continue to live. (Osteoplasty by means of bone—*osteoplastie osseuse, directe, proprement dite.*) Such methods are—

1. The insertion of a bone or portion of bone entirely separated from all its attachments. To this may be appended the implantation of teeth.
2. The insertion of a piece of bone which is yet partially adherent. Of this method there are two distinct modifications.
 - a. The reinsertion of a piece of bone, which has been so separated as to leave a connecting bridge, into the spot to which it originally belonged.
 - b. The transplantation of adjacent, and yet adhering, portions of bone.

B. The second group embraces those methods by which we bring a tissue, from which bone can be produced, to some part of the body where it shall heal-in, live, and produce bony substance. (Osteoplasty by means of a bone-producing tissue—*osteoplastie indirecte.*) Such methods are—

3. The transplantation of a periosteal flap left partially united to the neighbouring periosteum.
4. The transplantation of a periosteal flap separated from all its connexions.
5. The preservation of the periosteum with the surrounding soft parts in resections of bone—subperiosteal resection. To this method may be appended—
 - a. Subcapsular resection.
 - b. The scooping-out of bones—*évidement des os.*
6. The transplantation of the osteogenous substance shaved off from the periosteum.

He criticises at length the various attempts which have been made to transplant portions of bone, both in man (after trepanning, &c.) and animals, and finds that in most cases the bone did not live, and

that in no case is it proved to have lived. He discusses the various criteria which have been given of the vitality of transplanted bones, the formation of adherences, the normal appearance, the growth, the occurrence of absorption, softening, fatty infiltration, or incrustation, the appearance of different changes in different parts, and the artificial injection of the vessels. Of these, only the last and the growth of the portion of bone can have any weight in the decision. The author followed the much more satisfactory plan of feeding the animals for a lengthened period after the operation with madder; according to him, this is a simple, easily employed, indisputable, and only decisive means for the solution of this difficult question. The presence of colouring matter could only be explained by its transmission through the capillaries, and by the existence of a normal irritability and active nutrition. We are undoubtedly right in admitting that the transplanted bone has continued to live when it becomes of a red colour; that the nutrition has been excessive or defective when the colour appears more or less intense than that of the other bones; and, finally, that the inserted portions present the same appearances as if dead when they have not become in the least coloured red. Among the experiments, we may notice one in which it is shown that a dead bone underwent fatty degeneration, and another (p. 240) in which a portion of the skull of a dove was entirely removed, and then replaced; it healed in, and the use of madder proved not only that it had lived, but also that there had been a more active change of tissue in it than in the other cranial bones. Such a result is, however, rare; it seems probable that it will occur especially where the wound has healed by the first intention, where the bone has been replaced in its original position, so that the edges exactly fit one another, and where the piece has been removed from one of the flat bones. Among the uses, or possible uses, of osteoplasty in surgery, we may notice that the replacement of the disc of bone sawn out by the trepan was long since advocated by Ph. v. Walther, Merrem, and Klencke; it appears, however, that such a proceeding is little likely to succeed, partly because of the entire separation of the piece of bone from all its connexions, and partly because the piece replaced is somewhat too small, owing to the rim being worn down by the saw. The author has experimented with another method, which appears to offer greater probability of success; the bone is divided with the chisel so as to cause no loss of substance, and on one side the piece is left connected with the surrounding pericranium, which is drawn aside with a hook during division of the subjacent bone. Other osteoplastic resections, in which the bone is separated so as to leave a connecting bridge, and again replaced in its original position, are those of the nasal process of the upper jaw, with *os nasi* of the same side, performed by Langenbeck for a large naso-pharyngeal polypus; the operation performed by M. Huguier for the same purpose ('Year-book,' 1862, p. 295); that by Langenbeck for a tumour of the sphenomaxillary fossa (*ib.*, p. 272); those on the lower jaw by Billroth (*ib.*, p. 289). The author enumerates among the possible applications of this process—(1) The operation already mentioned instead of trepanning. (2) Its use in some cases of very extensive necrosis. (3) Osteoplastic resection of

the scapula for the purpose of exposing tumours. (4) A similar operation on the sternum. (5) Instead of the removal of the zygomatic arch, as performed by Langenbeck ('Year-book,' 1862, p. 271), an osteoplastic resection. As examples of the transplantation of adjacent yet adhering portions of bone, he gives uranoplasty by bone, an operation proposed by Dieffenbach, and performed by Wutzer, Böhning, and others; Pirogoff's amputation of the foot, and the similar operations on the knee and elbow, proposed by Gritti and Szymanowsky; rhinoplasty, as performed by Ollier, in 1861; the cure of pseudarthrosis by transplanting into the intermediate space a piece of bone partially separated from one of the fractured ends, an operation which has not been attempted on the living. He concludes with a short account of osteotomy, and an enumeration of the cases hitherto recorded.

R. Volkmann points out that there are reasons for doubting the permanency of the new bony layers formed by means of periosteal osteoplasty ('Deutsche Klin.,' 1863, p. 204). The new bone formed in fractures, in stumps, in carious and anchylosed bones, is generally again absorbed after a time, and there is too much reason to fear that the bone formed by means of the transplantation of periosteum, as in uranoplasty and rhinoplasty, will suffer the same fate. R. Buchholz has given an account of the microscopical characters of the bone formed by transplanted periosteum ('Arch. f. path. Anat.,' xxvi, 78).

E. Zeis, the literature and history of plastic surgery (pp. 299, Leipz., Engelmann). M. Hiffelsheim, on heteroplasty ('Gaz. des Hôp.,' 1862, 579). Mr. Wood, successful transplantation from the abdomen to the arm ('Lancet,' 1863, i, 92, 635; 'Med.-Chir. Trans.,' vol. xlvi, p. 149). T. Holmes, series of three plastic operations successfully performed in a case of deformity of the neck from a burn ('Lancet,' 1863, i, 322).

Rhinoplasty.—Langenbeck, Verneuil, and Ollier, on periosteal rhinoplasty ('Arch. f. Klin. Chir.,' vol. ii, part 1, pp. 252-3; 'Gaz. Hebdom.,' 1862, p. 99, 'Gaz. des Hôp.,' 1862, pp. 219, 86, 87). M. Sédillot ('Gaz. des Hôp.,' 1862, p. 531). M. Nélaton (ib., pp. 122, 124, 136).

Cheiloplasty.—M. Trélat ('Gaz. Hebdom.,' 1862, p. 84). Prof. Szymanowski ('Arch. d. Heilk.,' 1862, p. 517). E. Hamilton, by single square flap ('Dubl. Quart. Journ.,' xxxiv, 291). F. D. Lente, case of Szymanowski's operation ('Amer. Med. Tim.,' vii, 121).

TRAUMATIC DELIRIUM.

In the treatment of delirium tremens, after injuries, W. Roser ('Arch. d. Heilk.,' and 'Arch. für Klin. Chir.,' iii, Gurlt's report, 219) recommends, as a vital indication, the most energetic administration of opium; for example, two grains of morphia at once, and a grain every hour after, till the pupils become much contracted and the respirations diminish to 10, 8, or even 6 in the minute. The appearance of a patient so narcotized is alarming, but the result soon shows that the deep narcotization has its use; the patient becomes quiet, he sleeps a deep sleep, from which he awakes free from delirium; should a recurrence appear, no difficulty will be found in its management.

WOUNDS.

M. Morel-Lavallée has directed his attention for many years to traumatic detachments of the skin and subjacent tissues ('Arch. Gén.,' 1863, i, 20, 172, 300). Such detachments of the skin are produced by bodies presenting a large surface and dragging the skin in an oblique or tangential direction, thus tearing through its attachments to the fascia; the passage of a wheel over a limb is the most common cause; direct pressure or blows produce contusion, and not separation of the skin. The pouches of skin, which are thus formed, vary much in size; the author has met with cases in which the separation extended over the whole inferior extremity, from the foot to the crest of the ilium. Effusion into them is extremely slow, and the amount exceedingly small; the cavity never becomes full; thus, many days after an accident, the author has found scarcely fifty grammes in a cavity which would hold more than ten litres. The fluid generally presents the characters of serum, sometimes limpid as water, sometimes more or less reddened by blood. Such cases are characterised by the small quantity of fluid contained in a large cavern; the swelling is diffused, appears in dependent spots, and changes its position when the part is moved; the extent of the cavity can be accurately measured by pressing the fluid in different directions; when the fluid is collected into one part, percussion causes a slight undulation; there is no fluctuation unless the fluid is pressed into one corner. It is sometimes of great importance to recognise this condition; thus, in a case of fracture of the foot requiring amputation, where the integuments of the leg and thigh are extensively separated, it will be necessary to perform the operation at a point nearer the trunk, for otherwise the knife will divide integuments certain to mortify. Although the fluid increases with extreme slowness, it has even less tendency to reabsorption; it becomes encysted, and thus of indefinite duration; the patients generally die in a state of stupor when the skin is extensively separated. Putrid suppuration soon occurs when, owing to a wound or slough, the external air penetrates into these vast caverns. Intercurrent erysipelas is also to be feared. In simple cases the treatment consists of—(1) evacuation of the liquid by means of an exploring trochar; (2) blisters, which should be applied in succession over the cavity, and be quickly healed up; (3) compression over the blister by some elastic material. Where a wound communicates with the cavity, it should be closed if primary union can be hoped for; in other cases it must be enlarged, placed in a dependent position, or counter-apertures must be made, as the occasion may require.

Relief of pain.—W. Detmold says, in his "Lectures on Military Surgery" ('Amer. Med. Times,' 1862, ii, 347), "You will occasionally encounter wounded, in a high state of nervous excitement and exaltation, who complain of the most acute and exquisite pain, much more than, under ordinary circumstances, such a wound would lead you to suppose. This may arise from an excited and exalted state of the nervous system, or may be from the laceration and irritation of some

nerve-fibres by a splinter of bone or some other foreign body. In these cases it is best to allay the excitement by a full dose of morphine, ten or fifteen drops of Magendie's solution, and to soothe the pain by sprinkling half a grain or a grain of morphine directly into the wound, which will in most cases act like a charm, allaying the pain immediately; yet where the excessive pain depends upon the irritation of some lacerated nerve-fibre, this relief may be only temporary. You should therefore furnish a little dry morphine to the attendant on the ambulance, with direction to repeat the local application, if required."

MM. Demarquay and C. Leconte, on the influence of different gases over the healing of divided tendons ('Arch. Gén.,' 1862, ii, 653). M. Voillemier, on the treatment of collections of blood and pus by capillary punctures ('Mém. de la Soc. de Chir.,' v, 101).

FROSTBITE.

S. Adams has recorded a case in which, after diarrhœa and rapid emaciation, the autopsy showed ulceration of the duodenum. "The mucous membrane was covered with small, irregular, elliptical ulcers, with rough, serrated edges, and extending in different directions." The author compares the condition with that occasionally found in cases of severe burns ('Amer. Med. Times,' 1863, i, 101).

GUNSHOT WOUNDS.

Mr. A. Neill enforces the importance of fresh air and of local treatment by fresh water ('Edinb. Med. Jour.,' viii, 790). In wounds of the chest the head must be kept raised, so as to relieve the breathing; he has found fixing the chest by means of broad strips of adhesive plaster, passed round from over the spinous processes of the vertebræ to the front part of the chest, leaving the wounds exposed, to give great relief to the breathing, changing the condition from torture and extreme agony to comparative comfort. After amputation acute bronchitis is to be feared, causing much danger to the patient; it is accompanied by a considerable diminution of the purulent discharge from the wound, and is little affected by the ordinary remedies; when the pus returns in increased quantity, the wound assumes a more healthy aspect, and the bronchitis gradually disappears. "In the course of treatment in gunshot wounds diarrhœa and dysentery are very frequently most annoying to the patient, and reduce the strength very rapidly. In these cases I have found nothing so speedily beneficial as powdered charcoal, in one-ounce doses, five or six times a day, and it has invariably checked the diarrhœa. Through the whole course of treatment I have found that the tincture of the muriate of iron in small doses, twice daily, has been of much service, and has changed the appearance of the wound in a few days after amputation, when of an unhealthy aspect, to a fine healthy look, where the consistence of pus changed materially. I have given it in thirteen cases of gunshot wounds, from the seventh day for a period of about a month or six weeks, with the most satisfactory results."

R. Davies strongly recommends Tieman's bullet-forceps ('Brit. Med. Jour.,' 1863, i, 539). He can, from ample practical experience, testify to its efficiency. It is graduated to sustain a weight of fifty pounds; and however deeply or firmly a leaden bullet may be driven into a bone, a sufficient space for its teeth to hold by is created from the mere passage of the bullet. It is constructed with long and stout teeth, set outward like the incisors of a mouse, and will seize upon and hold a leaden ball when even a quarter of its diameter is within their grasp.

Bloodletting in chest wounds may, according to W. Detmold ('Amer. Med. Times,' 1863, i, 1), be replaced by another method. He says, "I would strongly recommend to you a remedy, which, while it gives you all the advantages to be derived from copious and repeated venesection, is free from all its injurious results; this remedy consists in applying ligatures to the limbs by a circular pressure to the upper parts of the arms and thighs, tight enough to check superficial venous circulation without affecting the deeper arterial influx of blood. By this means, which is easily put into execution, you may temporarily withdraw any amount of blood from circulation without depriving the wounded of a single drop, the want of which might seriously affect his recovery; for when the momentary and imminent danger to life has ceased, that is, when the pulmonary hæmorrhage has stopped, you gradually loosen the ligatures and allow the blood which you have retained for a while harmlessly in the extremities to re-enter the circulation."

Dr. P. Smith questions the advisability of resection in gunshot or other injury of the knee-joint ('Amer. Med. Times,' 1863, i, 100). "Will there not be more hope for safety if the uninjured ligaments are left undisturbed, and merely the loose fragments removed through large depending incisions? Let every fragment be removed, and take care that the incisions traverse the synovial sac to its utmost limits, and I am persuaded that we have done our best. Nature can more readily repair it in that shape than she can unite the wound left by exsection. By exsection we also destroy all remaining ligaments of the joint, and render necessary the most perfect rest and most perfectly adapted splints. What do we gain by exsection? Merely the removal of shattered bone, the smoothing off of rough surfaces, and the extirpation of the synovial sac. All this, or its equivalent, is easily done by free longitudinal incisions and dexterous use of the forceps and gouge."

T. Longmore, report on gunshot and sabre wounds of invalids sent to Fort Pitt during the years 1860-61 ('Army Med. Reports for 1861,' p. 442, Lond., 1863).

Cicatrices.—M. Panas, on faulty cicatrices, and their treatment (Paris, A. Delahaye). J. H. James, on the deformities consequent on burns, and on the peculiar nature of the cicatrices ('Med. Times and Gaz.,' 1863, ii, 246).

Blue pus.—A. Lücke ('Arch. f. Klin. Chir.,' iii, 135; 'Deutsche Klin.,' 1863, 129). Dr. Bartscher ('Deutsche Klin.,' 1863, 97).

Erysipelas.—A. Desprès, treatise on erysipelas (Paris, A. Delahaye), and statistics ('Gaz. des Hôp.,' 1863, 41). H. Dannenberger, nitrate of silver in erysipelas ('Arch. d. Heilk.,' 1863, 191).

Ulcers.—L. Ulmer, compendium of helcology (Wien, Braumüller).

R. Volkmann, on the healing of ulcers under scabs, &c. ('Arch. f. Klin. Chir.,' iii, 272)

Hospital gangrene.—A. North ('Amer. Med. Times,' 1863, i, 255). G. B. Weeks (ib., ii, 46). R. L. Stanford, J. A. Dougherty, and Mr. Goldsmith, on bromine in hospital gangrene (ib., 24, 84, 121). Discussion on hospital gangrene (ib., 109, 122). F. H. Hamilton, two cases occurring without previous wound, (ib., 1863, ii, 181,) and tabular statement of thirty-three cases (ib., 205).

Pyæmia.—W. S. Kirkes, on pericarditis consequent on pyæmia ('Med. Tim. and Gaz.,' 1862, ii, 431, 461). R. Quain (ib., 1863, ii, 29).

SEPTICÆMIA.

Prof. Panum, in his experiments on putrid infection ('Arch. f. path. Anat.,' xxv, 441), never found any inflammatory changes in the lungs, provided the putrid fluids had been carefully filtered. The putrid liquid employed in these experiments came from decomposing dog's flesh; cold distilled water was used, and then repeatedly filtered. In respect to the nature of the putrid matters, he found the following results:

1. The putrid poison is not volatile, but fixed; it does not pass over in distillation, but remains in the retort.

2. The putrid poison is not decomposed by boiling and evaporation, not even when the boiling is continued for eleven hours, and the putrid matters are perfectly dried by means of a water bath.

3. The putrid poison is insoluble in pure alcohol; it is, however, soluble in water, and is contained in the watery extract of the dried putrid substances, after their previous treatment with alcohol.

4. The albuminous substances often contained in putrid fluids are not *per se* poisonous, but only become so because they condense the poison on their surface; they can be freed from it by careful washing.

5. The intensity of the putrid poison can only be compared with that of serpents, curare, and the vegetable alkaloids; for after boiling, evaporation, and treatment with pure alcohol, 0.012 gramme of it almost suffices to kill a little dog.

He will not attempt to decide whether the putrid poison acts directly on the nervous system or as a ferment on the blood; if, however, it should prove to be the latter, it would differ from all known ferments by retaining its power after boiling and after treatment with pure alcohol.

On septic poisoning of the blood, by W. Roser ('Arch. d. Heilk.,' 1863, 135, 233). Much confusion has arisen from a number of different conditions having been thrown together under collective names, such as putrid infection, septic poisoning of the blood, septicæmia. It has been too often forgotten that a great number of chemical processes are included in the popular idea of putrefaction; that many different products of composition are absorbed, and may be injurious; and that the circumstances under which decomposing bodies act on the organism vary extremely. It certainly makes a material difference whether a putrid matter passes from the stomach or intestinal canal, and thus acts on the portal vein and liver, or whether, infiltrated in the cellular

tissue, it excites local irritation; whether it possibly induces inflammation or coagulation in the veins and lymphatics, or whether, after the manner of other poisonous materials, it mixes with the blood, and so exerts both general and local injurious actions.

Such cases as belong to surgery may be distributed under four heads:

1. Traumatic sepsis (purely traumatic, primary traumatic sepsis).
2. Poisoning by putrid matter (secondary infection, self-infection).
3. Infection by the poison of dead human beings and similar matters (infected wounds).
4. The specific zymotic septic process, hospital gangrene, malignant pustule, noma, &c.

1. *Traumatic sepsis*.—Such are cases of severe injury, of comminuted fractures with extravasations of blood, where the dead parts at once pass into decomposition, and where the patient is attacked in a few days, before suppuration has commenced, by an acute, and often fatal, fever, a fever which can scarcely be otherwise explained than by the absorption of products of putrefaction. A fracture of the arm or leg, in which the injury is far from appearing so important, may be complicated with such internal destructions of tissue that the patient dies even in twenty-four to forty-eight hours, from the putrid decomposition and the absorption of putrid products. In many cases the septic poisoning of the blood occurs in combination with septic emphysema of the part ('Year-book,' 1862, pp. 216-18) and septic infiltration of the cellular tissue. This condition was first described by Maisonneuve in 1853, under the title of "gangrène foudroyante." Billroth has given cases in which the putrid decomposition was not so rapid—a process of exudation, purulent exudation, indeed, being at the time in process. ('Year-book,' 1862, p. 197.) The cases of this description form a transition to those of poisoning by decomposing pus, and are clearly the most common. They must, however, be included in the category of traumatic sepsis, according to the principle *a potiori fit denominatio*, according to the logical requirement that the essential and principal should be placed first, provided their course is such as to justify the presumption that the poisoning depends, not only on the decomposition of the pus, but also on the putridity of the effused blood and necrotic portions of tissue. Roser has seen cases which appear to show the possibility of a septic metastasis to the sacral region. He supposes that, perhaps, in septic poisoning of the blood, a local affection or metastasis is most liable to occur in such parts as are most dependent—in the mass of cases the sacral region. He is not disinclined to consider many cases of gangrenous bed-sore as metastatic affections. He concludes that—

1. There exists a septic poisoning of the blood by primary traumatic gangrene.
2. There exists a septic infiltration of the cellular tissue by primary traumatic decomposing products.
3. There exist cases of secondary septicæmia in which the decomposition of the tissues and the putrefaction of extravasated blood are the principal phenomena, and the formation or decomposition of pus only accessory.

4. Finally, there exist cases of septic poisoning of the blood in which the disease appears to depend partly on the decomposition of the blood and tissues, partly on that of the purulent secretion.

2. *Poisoning by decomposing pus.*—Two different types of this form of poisoning may be clinically distinguished—that from the primary decomposition of the pus produced in acute suppurations, and that from the secondary decomposition of the purulent matter contained in chronic or so-called cold abscesses. The treatment of abscesses is regulated to a great extent by the principle that acute abscesses must be opened to prevent the absorption of decomposed pus, and chronic abscesses must be as long as possible unopened, to prevent decomposition and the absorption of the products so formed. We can perceive on the second day after a chronic abscess has been opened the odour of sulphuretted hydrogen, and by the fourth day it is very intense. The patient, who had been previously without fever, now presents an increase in the temperature—a coated tongue, a bad appetite, and other, especially intestinal, derangements. From the fourth to the sixth day the decomposition continues; after that period the symptoms again diminish, the pus becomes healthy, and unless there is some impediment, as caries or tuberculosis, convalescence ensues. Pyæmia is very liable to supervene in an infected hospital, but not in private practice. Some of the patients die from tuberculosis, others from albuminuria, others from exhaustion caused by the profuse and long-continued discharge. Death may, however, take place during the first stage after the opening, and the symptoms are then those of an acute septic poisoning of the blood. The symptoms are feverish heat and increasing weakness, perhaps diarrhœa, vomiting, and the formation of bed-sores; death occurs within the first eight days. Post-mortem examination discloses no further local lesion, no pyæmic deposits; nothing is more simple than to refer the death to the septic poisoning of the blood. Acute abscesses are also attended by a series of morbid phenomena which can only be readily interpreted by the supposition of the absorption of decomposed matter. The rigor which so often accompanies the formation of an acute suppuration, the loss of appetite, the constant sweating of the patient, are the principal results which may be ascribed to the decomposition of pus. The condition is generally at once improved by the opening of such an abscess. In the author's opinion, traumatic fever depends on the formation and absorption of pus, or, as he proceeds to more exactly define, the symptoms of fever which usually occur after serious injuries are in most cases to be referred to septicæmia. Since a wounded man, a case of amputation, or any case of similar injury, does not present symptoms of fever till from the third to the sixth day, till the occurrence of a fetid suppuration—and since another patient, injured in a similar manner, in whom such suppuration does not result, is unaffected by fever—is it not clear that the fever is caused by the decomposition and absorption of the secretion, and not directly by the wound or the inflammation of the wounded surfaces?

It hence appears that two kinds of decomposing pus must be clinically distinguished—that from chronic abscesses, characterised by an

odour of sulphuretted hydrogen, and that from many acute suppurations pus of the latter kind possesses no special chemical characters.

Hectic has been by many authors represented as a kind of chronic pyæmia; it would be more correctly considered a chronic septicæmia. We cannot, however, state with any definiteness how far the shivering, fever, and sweating, depend on the admixture of noxious agents rather than on the daily loss of constituents of the blood. No one, it appears, has any idea how to explain the morbus Brightii which so often supervenes on chronic suppurations. The same is the case in respect to the aphthous process on the mucous membrane of the mouth and fauces; though, perhaps, a part of such cases may be connected with ammoniæmia, we are still far from a special etiology. There are many extremely fetid abscesses which cause few or no general symptoms of disease in the body; this may depend upon the walls of the abscess being callous and impeding absorption, or upon the odorous substances not being those which exert the most injurious influence. We are yet far from knowing what are the products of decomposing pus, and which of them are specially noxious. The volatile fatty acids, and their compounds with ammonia, are clearly not the most important, nor yet are the sulphuretted hydrogen and ammonia. An important advance will, perhaps, be made in the doctrine of septicæmia, when the chemical constitution of the fixed putrid poison discovered by Panum has been more accurately determined.

Dr. A. Cantani has experimented with Polli's treatment (sulphite of magnesia 'Year Book,' 1862, p. 215), and has found it of service in some cases ('Arch. d. Heilk,' 1863, p. 278).

Gangrene.—W. Cadge, on traumatic gangrene ('Brit. Med. Journal,' 1863, ii, 368). Post-mortem examination of a case of traumatic gangrene ('Gaz. d. Hôp.,' 1862, p. 604).

Tetanus.—F. Asschenfeldt, case of recovery ('Arch. f. path. Anat.' xxvi, 424). E. Leyden, on the pathology of tetanus ('Arch. f. path. Anat.' xxvi, 538). J. Tufnell, on nicotine ('Dub. Med. Press,' and 'Braithwaite,' xlvii, 46, 51). S. Wood, recovery after division of int. saphenous nerve ('Brit. Med. Journal,' 1863, ii, 5).

Hydrophobia.—Cases ('Spit. Zeit.,' 1862, 514, 521, 537; 'Schw. Zeitschr.,' i, 351). Gualla and Gherini, on curare in hydrophobia ('Gaz. Hebdom.,' 1862, p. 701). E. Gintrac, on spontaneous hydrophobia (ib., p. 731). Oppolzer ('Wien, Med. Halle,' 1862, p. 423, &c.). Discussion on hydrophobia ('Gaz. d. Hôp.,' 1863, p. 435, &c.).

Glanders.—Mr. Savory, farcy cured by iodide of potassium ('Med. Times and Gaz.,' 1863, i, 161). C. Leblanc ('Arch. Gén.,' 1863, i, 84). W. Pissling, case ('Spit. Zeit.,' 1863, p. 337, &c.).

Malignant pustule.—W. Budd ('Brit. Med. Journal,' 1863, i, 85, &c.). M. Bourgeois, on the importance of the nomenclature ('Gaz. d. Hôp.,' 1863, p. 442.)

Venereal disease.—History of venereal diseases among the Chinese ('Arch. Gén.,' 1863, i, 625). A. Reder, pathology and treatment of venereal diseases (pp. 343, Wien, Sallmayer and Co.).

GONORRHOEA.

Prof. Zeissl has published some researches on the active constituent of copaiba ('Wien. Med. Wochenschr.,' 1863, pp. 100, 115). It appears certain that the action of copaiba is purely local, and that it does not cure by the production of any change in the blood; besides, it only acts on the urinary organs, as is shown by its negative effect in uterine and vaginal discharges, as also in gonorrhoeal ophthalmia. These facts, supported by Ricord's well-known case of urethral fistula, prove that the change in the urine produced by the medicinal agent causes the remedial effect. As it is now known that copaiba is not a single body, but composed of several constituents, it becomes necessary to trace the action of each constituent separately. It contains a volatile oil = $C_{10}H_{18}$, copaivic acid = $C_{40}H_{32}O_4$, and a neutral resin, which has not yet been analysed. Another fact of some importance has been pointed out by Rees ('Guy's Hosp. Rep.,' ser. i, vol. vi, p. 121), F. Simon, and Valentin; it is that the urine of those, who had taken cubebs or copaiba some hours previously, gives an opalescent precipitate on the addition of nitric or muriatic acid.

According to the author, Dr. H. Weikart was the first to study this question with skill and success ('Arch. d. Heilk.,' 1860). Weikart concluded that the active constituent, the resinous acid or the volatile oil, must be contained in the urine. His researches merely showed that little or none of the oil passed into the urine. Prof. Zeissl has repeated these experiments, and has arrived at the same conclusion. He explains the formation of a precipitate as follows:—Copaivic or any other resinous acid administered, unites in the intestines or in the blood with potash or soda, and thus forms a resinous soap (resinate of potash, resinate of soda) soluble in water, and expelled in solution in the urine. If, now, a stronger acid is added, the resin falls as a precipitate.

The next step was, of course, to experiment with copaivic acid or with the copaivate of soda. As, however, these can only be obtained with great difficulty, Prof. Zeissl employed other resinous acids; thus, in a case of very refractory gonorrhoea, he administered abietine acid, combined with carbonate of soda in the proportion of 3 to 2, and in the dose of 12 to 15 grains a day, with an exceedingly good effect. As the body from which abietine acid was derived, and as a material to be readily obtained, he tried colophonium, finely pulverized, and combined with magnesia usta or carbonate of soda, in the proportion of 3 to 1, and in the dose of 5 to 6 scruples a day. His experiments were too few to show the therapeutic effect; they proved, however, that the simple administration of copaivic or pinic acid (colophonium) did not induce the peculiar precipitate in the urine already mentioned. This could only be explained by the solid form of the resins mentioned, the fluid condition of the copaivic acid in the ordinary copaiba allowing a rapid change into resinous soaps, soluble in water. To bring the resinous acids contained in colophonium, as soluble bodies, into the organism, he determined to administer them in the form of a soap. Three ounces of crystallized carbonate of soda are dissolved in 12 ounces of distilled water; the solution is then heated to the boiling-point,

when two ounces of finely pulverized colophonium are gradually added, the whole being constantly stirred, until a drop placed on a cold porcelain plate stiffens into a soap-like mass. The soap is then placed on a filtering cloth, and after the lye has dropped off, thrice washed with a little distilled water. So prepared, it forms a yellowish-brown, smeary mass, which becomes darker and firmer by exposure to the air, but not dry; it has a slightly alkaline, bitter, aromatic taste, and a smell resembling that of turpentine. It is perfectly soluble in alcohol, but with water forms only a frothy substance. Four parts of this soap mixed with three parts of magnesia usta form a mass which may be divided into three-grain pills, and thus each pill contains four sevenths of a grain of the soap. Prof. Zeissl has given eighteen to twenty-four of these pills daily, and has never seen after them such disturbances of the digestive organs as after the use of copaiba or cubebs. The precipitate in the urine previously mentioned may be found after the ingestion of eighty or one hundred pills.

M. H. Collis, on gonorrhœa ('Dub. Quart. Journal,' xxxv, i). O. Max, on the treatment of gonorrhœa ('Schmidt's Jahrb.,' vol. 117, p. 175). Dr. Montgomery, on the treatment of acute gonorrhœa as a purely local affection ('Madras Quart. Jour.,' v, 101).

SYPHILIS.

H. Lee, 'Lectures,' 2nd ed. (Lond., Churchill). J. Hutchinson, 'Clinical Memoirs on Certain Diseases of the Eye and Ear, consequent on Inherited Syphilis' (Lond. Churchill). P. Diday, 'Natural History of Syphilis' (pp. 276, Paris, Asselin). In this work the author gives a fuller exposition of the views he had previously advanced ('Year-book' for 1862, p. 227).

Dr. S. Wilks, on the syphilitic affections of internal organs ('Guy's Hosp. Reports,' third series, ix. i). It is now maintained "that the internal organs may be affected equally with the external; that not only the cranium, but the brain within it, or the nerves; not only the muscles of the limbs and tongue, but the heart; not only the pharynx, but the œsophagus; not only the larynx, but the trachea, bronchi, and lungs; also the liver, spleen, and other viscera."

"In syphilis there is a disposition to the effusion of a low form of lymph, or fibro-plastic material, in nearly every tissue of the body, occasionally modified in character to a slight extent by the organ in which it occurs. Consequently, in those who have died suffering from this disease there is scarcely an organ but what may be found affected in this particular way. In solid organs, or in the interior of the tissues, there is found a more or less circumscribed deposition of an albumino-fibrous material, whilst on the surface of the body a similar material may constitute merely the base and border of an ulcer; for just as cancer and tubercle, in their own peculiar diatheses, show themselves as masses of disease in the solid organs, and as ulcers in the skin or mucous membrane, so in syphilis the viscera may be found full of the syphilitic material, whilst on the pharynx, larynx, &c., an ulceration may also exist."

Dr. Wilks points out that the distinction between secondary and tertiary symptoms is quite arbitrary, the terms being used by different

writers in a different sense; but there is no reason for calling effused lymph on a bone a secondary symptom, and effused lymph of the same character in the liver a tertiary condition; and that it is altogether an assumption to infer that the latter affection occurs at a much later period than the former; indeed as the changes are precisely similar, there are good grounds for supposing that they both occur at the same time.

Syphilis being a constitutional disease, a patient cannot be said to be affected by it till some proof of general infection is afforded; a primary sore alone is therefore not syphilis at all—it is not till the peculiar deposition of fibro-plastic elements, causing induration, takes place, that the patient can be considered to have syphilis. A sore no more means syphilis than the bite of a mad dog means hydrophobia, unless the system be infected. It would be better if the terms primary and secondary were abandoned, and the simple term syphilis used instead.

“What is meant by tertiary syphilis.”—If the so-called secondary syphilis, or that which is simply syphilis, possesses certain characteristic phenomena, we have a means of recognising its existence; and if, therefore, we find such phenomena classified amongst the tertiary or ulterior changes of the disease, we must replace them in their proper position. Writers, however, have not only spoken of changes already alluded to as being sometimes secondary and sometimes tertiary, but they have referred to other totally different morbid conditions under these names, and which, therefore, clearly require separation. These I should regard as the ulterior results of syphilis, not immediately dependent upon it, although induced by it. They are different from the peculiar effects of syphilis already spoken of, and can only be regarded as the sequelæ. Any form of cachexia, indeed, may produce them, although it is especially those parts which have been in the first place affected by syphilis which suffer, and thus it is not so much the character of the change which denotes the syphilitic origin as the site of the disease. Thus, the bones are affected in syphilis in a manner which is generally characteristic; but if from any cause the patient fall into a bad state of health, an extensive caries or necrosis of the ordinary kind may result. The first change is syphilitic, the second is a sequela of syphilis. Several cutaneous affections resembling these sequelæ may occur under various circumstances, as, for example, ecthyma and rupia in impoverished strumous children. So also the syphilitic disease of the larynx may proceed under certain circumstances to disease of the cartilages, but the latter may occur independently of the syphilitic taint. Besides these aggravated diseases, arising in organs first affected under the influence of the venereal poison, but which have ceased to be syphilitic, and therefore to be regarded as the sequelæ rather than results of a tertiary stage, there are other changes in the organs which have received a considerable share of attention of late years. I refer to the lardaceous or waxy disease of the viscera. In persons who have been worn out by syphilitic disease, and been suffering long from a resulting cachectic habit, such state of organs may be very fairly predicted to be present; but they are by no means evidence that syphilis has existed, since they occur in cachexia arising from other causes. They are constantly found in young scrofulous subjects who have long been ill with some local disease, as of a joint or a bone, and therefore

cannot by any means be regarded as connected essentially with syphilis. The latter term should therefore be altogether removed from that form of affection in which they are found to exist. If the cachexia under which they occur be induced by syphilis, then let the cachexia be regarded as the sequela, and not styled the tertiary stage. Should, however, writers wish to retain the latter term, let it be strictly confined to this condition, and not made to include that in which the results of true syphilis are also found.

“The subject, therefore, frames itself to my mind in this way: that the so-called secondary syphilis should be simply styled syphilis, and that the disease is known to exist so long as certain phenomena occur, these being exemplified more especially by the exudation of lymph in the various tissues of the body, thus showing that a morbid action is still in existence, and, according to some authors, a virus capable of being propagated in various direct and indirect manners. This virus may be exterminated by remedies or may wear itself out, and the patient recover his health; but not infrequently, as a consequence of the vitiation which the constitution has undergone (although the syphilitic poison may itself have disappeared), a morbid state of system may have been produced, tending sometimes to a fatty degeneration of the various structures of the body, but more especially to that change known as the lardaceous or waxy. This might, with more propriety, be called the second stage, or, if preferred, the tertiary stage, but one to be distinguished from the preceding, inasmuch as the virus was then still present, whilst in the latter it has departed, the changes in the tissues being attributable to the cachectic condition, and therefore not unlike what may arise under other circumstances. Such a division of the disease into syphilis and its sequelæ is one which I have long proposed to myself, finding it a simple one, and warranted by clinical experience as well as by pathological research.

“The post-mortem discoveries of the combination of the results of the secondary and tertiary stages should present no difficulty, since much of the albumino-fibroid material formed in the true syphilitic stage is incapable of absorption, and remains during the life of the patient. Deposits of this kind may, therefore, be found in the livers of those who have quite recovered from the disease, and may have died many years afterwards of an independent malady, or may be found in those who have succumbed to the ultimate effects of syphilis in the so-called tertiary stage. Because they are discovered in coexistence with ulterior changes, they are not therefore to be regarded as necessarily of the same age with them; for example, a lardaceous liver, with fibroid deposits in it, is rather to be looked upon as an exemplification of two distinct morbid phases than showing occurrences of the same period. This explanation will remove many of the difficulties in the way of separating the stages of the disease, but not hitherto made quite clear, because amongst syphilitic subjects the greater number would be found dying at the later periods than at the earlier ones, and therefore all internal affections would be placed in connection with that stage in which death took place. All experience and analogy, however, would show that these affections arose at an earlier time, and been merely carried on to a later period when they were made manifest to the eye.

"I would not go so far as to draw in every case an absolute line between the secondary and tertiary stages, nor to say that because ulterior changes had commenced that all secondary had been removed; for in cachectic patients, in whom it could not be said that degeneration of the tissues had not commenced, it would seem sometimes as if syphilitic taint had also not quite disappeared."

Effects of mercury.—"The opinions held regarding it are apparently most conflicting, some of the older school maintaining that the prolongation of our cases at the present day is due to a less abundant use of mercury in the attempt to cure the disease locally, whilst many of the modern school refer the ravages of syphilis of former days to the universal and too free administration of the drug at that period; they point to the caries and necrosis of the bones, shown by the destruction of large portions of the cranium, as evidence of the superiority of the later to the older method. These statements are probably both correct, and by no means incompatible. It will be perceived that it is assumed that the effects of syphilis and mercury are alike, and therefore it may be asked whether the question could ever arise were we properly acquainted with the peculiar effects of each. I believe there are many eminent men who hold the opinion that some of the worst forms of disease observed in syphilitic patients, especially the necrosis of bones, are due to mercury, and thus the greater frequency of this form of disease in by-gone years, when this metal was more freely and more indiscriminately administered. But how is this to be reconciled with the fact that mercury does not affect the bones? Experiments have been made repeatedly on animals, and all observers have agreed that the bones are not affected by the drug. Moreover, mercurialism is continually produced in artificers in quicksilver; of such I have seen several cases, where paralysis had existed so as to deprive the patient of locomotion, where the mind also had been impaired, and, in fact, the whole body undergoing decay, and yet the bones had escaped. It has been said also that mercury produces other effects resembling those of syphilis, but of this there is even less proof. The opposite of such statement I believe to be nearer the truth, the tendency of syphilis in the constitution being to the production of a plastic lymph in the tissues, whereas the effects of mercury are the very reverse; they are, indeed, antagonistic, tending to the absorption of new tissue, if such exist—and if it do not, to the destruction of the old. In syphilis there is a formative action, in mercury a destructive one.

"I think all such contradictory opinions to which I have alluded are clearly explicable if the division of the subject according to the secondary and tertiary forms of the disease be strictly maintained, or rather, as I would have it, into syphilis and its sequelæ. The former, or secondary, shows the effects of the virus in the albuminous depositions, whilst the tertiary exhibits the degeneration of the tissues due to the morbid action so long in process. Mercury is antagonistic to the first, but in unison with the second. It does not produce symptoms like those of the former, but only of the latter; but these are not syphilitic at all, but due to cachexia merely. Mercury, therefore, is antagonistic to the syphilitic condition, promoting the absorption of the lymph, which is prone to be thrown out, but is at the same time a

powerful poison, acting probably on the blood, producing anæmia and tending to a degeneration of the tissues. It must be evident that, either from the nature of the original poison or from some peculiar constitution of the patient, a powerful medicine like mercury may have exerted all its powerful influence, and beyond this have been injurious. If, therefore, a caries of the bone exists, which, corresponding to a true ulceration of the syphilitic kind, exhibits a depression in the centre, with a deposition of new bone around, we know that this will heal in time, and few, I think, will deny that mercury at one time may not be beneficial; but should the caries progress beyond this stage, and lose its characteristics in consequence of some general constitutional disturbance, nothing would be more likely to accelerate its progress than mercury. In a word, I consider that in the true syphilitic caries of the bone presently to be described mercury is useful; but if disintegration commences, above all remedies it would be harmful. The two statements, then, of its beneficial and injurious effects are not antagonistic; for although there is no proof that mercury has any especial effect on the bones, yet if a destructive caries already exist, no drug is more likely to extend the process. I cannot, therefore, but think that the observation of experienced men like those I have mentioned, as to the too frequent baneful effects of mercury, must be correct. An objection may be raised by some in the denial of such an affection as syphilitic caries, or that this is ever witnessed without the administration of mercury; to this it may be answered that, if reference be made to those severe cases of necrosis of the calvaria where large plates of bone are detached, the opinion is, no doubt, correct; but if it be denied that a caries to a less degree occurs from syphilis alone, the statement must arise from want of experience, for, as I shall presently show, a caries may constantly be found in the cranium when the scalp is removed where no disease, or at most a periostitis, was suspected to exist."

Mode of formation of syphilitic deposits.—"The character which the deposit assumes in a muscle may be taken as that which prevails more or less in all other organs. In the tongue or in one of the muscles of a limb, a rounded, hard lump may be felt through the integuments, and thus constitutes a tumour. It differs, however, from the ordinary class of tumours, known as new growths, since the latter proceed from a small point or centre, and continually grow on the surface, whereby they become circumscribed, and are constituted wholly of the new material which has been thrown out. This is the case in cancer or tubercle. In the syphilitic tumour, however, the exudation appears to have been, in the first place, of a soft and albuminous character, and being poured out in large quantity, has infiltrated the tissue; consequently, when examined, the lymph and the original structure of the part are found incorporated. At a subsequent period, when this has become hard, if a portion be examined by the microscope, the muscular structure will still be found present in the apparently simple, hard, fibrous mass; and thus it is that, if appropriate remedies be given at an early period, the tissue will be left in its integrity after the adventitious material has been absorbed. This is everyday experience as regards the tongue. In consequence, also, of the lymph being poured out, and not growing from a centre, the diseased mass is not so circumscribed as a

new growth, and the lymph or fibre will be found radiating into the muscular tissue around. Thus it is that the surgeon meets with such difficulty in his attempt to remove these tumours by operation; instead of their turning out as an ordinary new growth would do, these have to be actually cut out. If not absorbed by remedies, they become very hard, and then more circumscribed, and remain inert for many years.

“In the liver the same process occurs. In this organ the fibroid nodules are not seen, as a rule, until after some years of their existence. They are then hard, more or less circumscribed, but found shooting out their fibrous rays into the surrounding hepatic tissue. In this case, also, owing to the contraction which takes place, there is often left a remarkable cicatriform appearance on the surface. It is this exudation of lymph or fibro-plastic material and subsequent contraction which peculiarises the disease; thus, in the pharynx and larynx, not only is there an ulceration, but an induration at the edges and base of the ulcer, formed by the same material, and in the case of the larynx there may be sometimes found a simple fibroid deposit, without ulceration. In the bone a similar exudation occurs in the canals, and if accompanied by caries, is followed by a similar cicatriform appearance as in other parts. This is often well exemplified on the os frontis of the cranium.”

Structure.—“The deposit which is met with in the liver and other organs has generally had a long existence there before it comes under our notice, and then, when submitted to examination by the microscope, is found to contain fibro-plastic elements, small nuclei, fatty granules, and some amorphous matter. By French and German writers the term gummy tumour is used to designate these syphilitic deposits, but it is a word which I do not adopt, as it would seem to suggest a soft and almost semi-fluid tumour, which is a condition not often met with, except in a very recent stage of the disease; as usually found, they are hard and fibrous, indicating a dried-up condition of a fibro-plastic matter; occasionally a secondary softening process may have taken place, and thus in one or two instances the nodules in the liver have been in a semi-liquid state in their centres; but in the best-marked instance of this which I shall have to mention a question existed as to the genuine character of this deposit, and whether, indeed, it might not rather have been the remnant of a dried-up abscess. On the surface of the body or mucous membranes, however, this softening process does take place, and thus we have caries of the tibia and cranium, or ulceration of the pharynx and larynx.”

“*Is the syphilitic deposit peculiar and distinguishable?*—This cannot be answered affirmatively, since no elements possessing any peculiarities are found in it. At the same time, should nodules of fibroid tissue of the kind described be met with in the liver and in other parts of the body, a strong suspicion would be excited as to the nature of the disease; and should, moreover, they be associated with other conditions usually recognised as syphilitic, the proof of the existence of syphilis would be as satisfactory as that for any other disease. For instance, the elements of tuberculous matter are not so distinctive that a single tubercle in the body is sufficient to indicate its nature; indeed, should the theory of those physicians be correct, that tubercle

is only a modification of inflammatory lymph, it would necessarily require a certain amount or distribution of it from which a conclusion could be framed. This difficulty, however, in fixing the syphilitic deposit with any peculiar characters has been considered by some sufficient to discredit its venereal origin, for they have said, why should that be styled specific which presents no other features than those of an ordinary inflammatory product? In answer to this, I would say that, in all probability, time will evolve some distinguishing features in these deposits, but in the meanwhile I would demand of the doubters whether they disbelieve in the formation of a node on a bone, or lymph on the iris, because they are unable to point to the peculiarities of the effused products. I think that the changes in one organ are as characteristic as in another; and thus, if an excavated ulcer, with indurated edges and other peculiarities, is called syphilitic, because these are the appearances usually met with in the venereal disease, so in like manner I should say that fibroid nodules in the liver, deposited towards its surface, and producing a puckering of the surrounding tissue, are due to syphilis, because so frequently met with in that disease. The argument against such a conclusion, taken from the want of any peculiarity of structure, is equally applicable to the syphilitic deposits on the exterior of the body as well as to a large number of other morbid changes in the system.

Lymphatic glands.—"The modern theory is probable correct, that the enlargement and induration of those glands which accompany the Hunterian chancre is evidence of the true infecting character of the disease. When, however, the whole system has become contaminated, the glands in other parts of the body may become involved, and especially the posterior cervical; but in reference to this, there appears to be some question whether they be not enlarged in consequence of some slight eruption on the scalp. In favour of this view, it may often be noticed that when any irritation of the skin exists, they may be observed to be larger on that side where the cutaneous eruption is greatest. It would seem, therefore, to be a question still to be answered, whether the lymphatic glands are affected independently of the part whence the vessels leading to them proceed, seeing that, as a rule, these organs are merely involved in the same disease as the neighbouring texture, as, for example, the mesenteric, by typhoid deposit or tubercle, according to the character of the disease in the ileum; or as the bronchial glands are effected by cancer, tubercle, melanosis, &c., according as the lung itself is; or, as in pneumonia, where they are usually found inflamed, or at least enlarged and softened; for this reason I can quite believe that, since the lung may be affected by the syphilitic virus, so also may the bronchial glands.

"As before said, with regard to the liver and spleen, I regard the lardaceous enlargement of the glands as a *consequence* of syphilis. This general enlargement of the cervical, mediastinal, lumbar, and other glands, is sometimes found in connection with the lardaceous change of the viscera, and arises from a general cachectic condition accompanying mostly a disease of the bone; but if arising from syphilis, must be regarded merely as the sequelæ, and therefore not directly connected with my present subject.

Lungs.—"Should further observations prove that many of the cases of disorganization of the lung known as phthisis originate, not in tubercle, but in a low organizable deposit induced by the syphilitic poison, a very important fact in clinical medicine will have been discovered. There is no doubt that exudations may occasionally be found in the lungs which resemble in every respect those which have been described as occurring in the liver or other organs, and at the same time it is well known that those persons whose constitutions are broken down by syphilis and debauchery often fall victims to consumption; but to connect these two conditions requires many more observations than we have at present at command. For when the lung is disorganized it is very difficult to ascertain the character of the material which has been poured out into it, and originated the disease; it may often, indeed, be found to be non-tubercular; but as low forms of inflammatory product are exuded under so many circumstances, we require that it should present some characters more marked before it can be pronounced indicative of the syphilitic poison.

"An almost endless number of cases might be quoted where, in syphilitic patients, induration of the lung-tissue and local consolidation have been found, but it would be presumptuous, in the present state of our knowledge, to connect these conditions directly with the venereal taint." Dr. Wilks, therefore, merely relates two examples of cases where a simple deposit was found, and which, corresponding in every respect with similar deposit in other organs of the same case, left no room for doubt.

Larynx.—"Ulceration of the larynx is commonly spoken of as one of the effects of syphilis, but it is of a peculiar kind. It is characterised by the production of a fibro-plastic material, which is always tending to harden and cicatrize under the curative process. It thus presents marked differences from other forms of ulceration, as for example, the tubercular, where the ulceration spreads, and the surrounding mucous membrane is often highly vascular. In the syphilitic process, when the activity has ceased from the administration of appropriate remedies, a cicatrization takes place, leaving the affected part puckered, hard, and shiny, as no other form of disease produces; the epiglottis may be quite destroyed, as well as a considerable portion of the vocal organs; but the larynx eventually is quite healed, though indurated and otherwise mutilated. The great peculiarity, however, of the syphilitic affection over any other is in the production of a fibroid material in the affected part, without any necessary ulceration, as in a case where only one small abrasion, and that quite recent, existed on the mucous membrane. In this case the upper part of the glottis had become gradually closed by a small nodule or tumour, which corresponded in every respect to a similar deposit in the liver. The disease of the cartilages of the larynx I regard as one of the sequelæ of syphilis, and may arise from other causes than the venereal affection."

Trachea and bronchi.—Dr. Wilks adduces four cases; in the first there was a remarkable contraction of the trachea, due to ulceration, at the same time the epiglottis was destroyed, and the interior cic-

trized in a manner which could leave no doubt as to its syphilitic origin. The second was a very similar case, the trachea being contracted from ulceration. The third case presented considerable thickening of the fibrous structure of the trachea, in all probability of a syphilitic character. In the last case one bronchus was remarkably contracted, a state, no doubt, due to specific ulceration.

Rectum.—Dr. Wilks has observed “ulceration of the rectum where the disease has extended inwards from the external parts. These cases have more especially occurred in women where an extensive ulceration of the genital organs has occurred, so as to involve the surrounding parts, and finally the rectum. Accompanying the ulceration of the mucous membrane, there has been an inflammation of the pelvic cellular tissue, and thus some contraction or stricture of the rectum has followed.”

Brain and nerves.—Dr. Wilks is unable to bring forward any example of a clearly independent deposit in the brain substance. All his own cases of undoubted venereal origin, where a post-mortem examination has taken place, have been very uniform in character; the surface of the brain and membranes have been united by a firm exudation, similar to that met with in other parts. If the neighbouring bone is affected, it is by caries, and not by exostosis. The membranes are not connected to the brain by cellular tissue, but by a hard, yellow substance, sometimes of great consistence, and destroying or involving the cineritious matter, or encroaching on the medullary.

Eye and teeth.—“Various other affections, fully described by surgical writers, I need not dwell upon, such as iritis, although it would be interesting to ascertain the relation which the nodules of lymph on the iris hold to simple inflammatory exudation, and the resemblance to the syphilitic deposits in other parts of the body. Nor need I but allude to the affection of the cornea formerly styled strumous, and which Mr. Hutchinson has so well illustrated by cases in his lately published work under the appellation *syphilitic interstitial keratitis*. It is interesting, however, to remark, in reference to the statement made at the commencement of this paper, that it was merely the external parts of the body, and those which come immediately under the view of the surgeon, which were thought to be affected by syphilis, and thus that the iris was considered to be the only part of the eye affected by syphilis, whereas now we are informed that the cornea, conjunctiva, choroid, retina, and, in fact, all the structures of the organ, may be involved in a syphilitic inflammation.

“I will only remark, as regards the teeth, that I consider Mr. Hutchinson has well made out his case respecting the alteration they undergo in syphilis, although the doctrine has not yet pervaded all branches of the profession. I have myself no doubt that the notched condition of the upper incisors is the result of syphilis, and is due to an alteration in the form of the tooth when in the pulp, owing to the stomatitis which so often exists in the tainted child. I have seen this condition too often in association with a flattened nose (owing to an expansion of the nasal bones during an infantile periostitis), with corneitis, and other signs of syphilis, to doubt that it has been caused in the manner which the above-named surgeon maintains.”

Bone.—"It has been hitherto generally assumed that the caries and necrosis of bone occurring in syphilis are of the ordinary kind, such as arise from the inflammation set up by injury; but recent investigations would tend to show that these processes in syphilis are peculiar. If this be true, it would explain much of the contradictory opinions which are held respecting the proportionate effects of syphilis and mercury on the osseous system. If, as was said at the commencement of this paper, it be considered by some that caries of the bone in syphilitic patients is always the result of an undue administration of mercury, it would be important to show that this is not so, but that the caries is of a peculiar kind, and one of the results of syphilis, occurring without the interposition of remedies. Of this I have no doubt, although, if the destruction of bone extend to a great degree, this may be due to an excess or abuse of mercury. It is to Virchow especially that we are indebted for investigations in this subject, and the result he arrives at so accords with the well-known appearance, that there is little doubt that his observations are correct. He maintains that in the cranium, for example, a similar process takes place as in other parts—a deposition of albuminous material occurring in connection with the periosteum without, or the dura mater within; and that the medullary or vascular canals are filled with the same kind of gummy substance as in other parts, when a node is produced; also that this may ossify, producing new bone, or that a caries may result. On the cranium the latter is seen forming a depressed centre, with a deposition of new bone around in a dentated form, giving it a cicatriform appearance, just as is witnessed in the pharynx or other parts.

"An examination of the skulls in our museum, will afford sufficient illustration of this fact; several will be seen showing the cicatriform or puckered appearance on their surface, the peculiarity being the destruction of the bone at the centre and the increase at the circumference, the caries having also a peculiar worm-eaten character. In ordinary caries from injury a destruction may be seen going on, and a development of new bone around, with smooth edges, and having the other ordinary features, without possessing the above-named peculiarities; also in skulls which exhibit a destruction of tissue by cancer or lupus the bone is simply eaten away, without any disposition to the formation of new osseous material. It will be observed that the deposition of the yellow albuminous material between the skull and dura mater in many of our specimens is peculiar, whereas in ordinary cases of disease from injury a suppuration is more likely to occur.

"In simple syphilitic caries there is no suppuration, and in this lies its peculiarity and an evidence of its origin. If, after a blow on the head, even if the scalp be not cut, the bone becomes carious in consequence, some purulent matter is generally found on the surface or in the diploe; but in syphilis the scalp may be quite sound, and yet, when removed and the periosteum torn off, a caries may be discovered which was quite unanticipated, and presenting the peculiarities above spoken of. It is for this reason that Virchow has styled it *dry caries*. The same peculiarity occurs with regard to a node on the tibia, which only

suppurates under peculiar circumstances, and therefore requires us carefully to distinguish a true syphilitic affection of the bone from one which is merely secondary to an ulceration of the surrounding soft parts. The former is that of which I am now treating, and takes place quite independently of any affection of the adjacent soft structures. Our preparations will show that sometimes, instead of a caries taking place, the exudation ossifies, and thus the bone becomes much enlarged or hypertrophied; and herein lies another argument against the affections of the osseous system being due to mercury, since the property of the latter drug is to destroy or disintegrate. No one, as far as I know, has yet considered enlargements of the bone to be due to mercury, at the same time that he has held the doctrine of the destruction of bone to be attributable to this drug. In a word, there is a disposition in syphilis to the production of an albuminous product beneath the periosteum and in the vascular canals of the bone. This may ossify, producing enlargement or hypertrophy of the part; or if ulceration takes place, a caries results; but here, as in the soft parts, a distinguishing feature is in the presence of a new material around it. As also in the former case, the ulceration is likely to increase from any cause tending to a disintegration of the tissues, so the caries of the bone may extend to a great degree under like circumstances, and especially under the influence of mercury. Thus are the two opinions reconciled—that all great devastation of the osseous system is met with only in those who have taken much mercury, and yet that mercury itself does not originate disease of the bone.”

Dr. Zambaco, on the diagnosis of syphilitic affections of the nervous system, ('Year-book,' 1862, p. 226; 'Edin. Med. Journ.,' viii, 628).—In general terms, it may be said with truth, that while no one symptom is pathognomonic of a disease being due to syphilis, the past history and a careful examination of the present condition of the patient are alone calculated to enable the practitioner to discover the essential cause of the malady. The question of diagnosis will, however, be more easily elucidated by taking a rapid glance at the more usual forms which the affection may assume, and observing the different aspects it may present as it occurs in practice.

In the most simple and easily recognised form we find that the nervous derangements are accompanied by other manifestations of the syphilitic diathesis, by which the attention of the practitioner is likely to be arrested. Thus at the very outset of the syphilitic cutaneous manifestations we meet with convulsions, hysterical and neuralgic affections. The eruptive fevers are the only diseases with which one is likely to confound the symptoms of nervous derangement which may occur during this period of the syphilitic infection; and this mistake may be all the more easily committed when we recollect that the eruption of syphilis may very closely simulate variola, varicella, or roseola, while the nervous prodromata of which we are speaking usually diminish or disappear when the eruption becomes developed. On the other hand, in cases of syphilis the eruption usually lasts much longer than the exanthem of an eruptive fever, and the general nervous disorders recur again shortly after the manifestation of the specific eruption, if they

had calmed down on its appearance. Besides, new symptoms indicative of the diathesis occur, which prevent, or at all events enable us to correct, any error in diagnosis. Such mistakes do, however, occur; in one case, for example, the patient was supposed by his medical attendant to have three times suffered from measles, thrice from smallpox, and once from typhoid fever.

At a more advanced period different paralytic affections, neuralgia, diseases of the eye, &c., may also occur in company with other manifestations of syphilis, the presence of which render the diagnosis much more easy. In such cases an attentive examination of the antecedents of the patient, the course or dependence of the different syphilitic phenomena, the relation of date or of intensity of the different nervous disorders with the other concomitant symptoms of syphilis, are so many guides to the discovery of the true nature of the nervous affection. We should, however, make allowance for coincidences, and not attribute every condition which may present itself to syphilis, merely because the patient is undoubtedly syphilitic. At the same time, if a patient has never previously suffered from an analogous affection, of a neuralgic kind, for example—if this condition became developed without the existence of any appreciable cause—if it was one of those affections which occur in the course of syphilis at that period at which the diathesis had arrived—if, by the date of its appearance, it could be referred to syphilis—if, lastly, it was cured by the use of specifics, and at the same time as the other symptoms of the diathesis, we should then have proofs sufficient to satisfy the most sceptical, and to establish as certain a diagnosis as any in medicine. Let us take, for example, the series of morbid phenomena presented by an epileptic shepherd. In the first place, none of his family had ever been affected with any disease of the nervous system. He had always enjoyed good health, and never displayed any sign of cerebral disease. In these circumstances he contracted syphilis, for which he was subjected to very irregular and insufficient treatment. Two years later, having already suffered from a condylomatous affection of the pharynx and violent pains in the head, he became epileptic. After numerous attacks, the epileptic symptoms yielded to a specific treatment, while at the same time the affection of the throat disappeared, after which several years elapsed, during which he enjoyed good health. But at a more distant date other constitutional symptoms made their appearance, such as ulceration of the pharynx, affections of the nasal bones, and intense pains in the head, and were speedily followed by a return of the epileptic seizures. Subjected anew, and after two years' persistence of these conditions, to specific treatment, both epilepsy and the other syphilitic symptoms were relieved. Some time after, all the affections disappeared completely. In such a case, though the epilepsy presented no peculiar phenomena, there could be no doubt of its dependence on the syphilitic diathesis.

The cases are not always so simple and satisfactory. It sometimes so happens that, during the active existence of constitutional syphilis, cerebral symptoms make their appearance which are ill-defined in their characters, or, assuming the form of apoplectic attacks or cerebral

softening, persist after the other external syphilitic symptoms have improved under the employment of specific treatment. For example, a patient suffering from gummata of the skin becomes hemiplegic, the cutaneous tubercles disappear under constitutional treatment, the paralysis continues; still it was due to syphilis, for at the autopsy a tertiary syphilitic tubercle was found in the corpus striatum of the opposite side. But the plastic deposit was surrounded by cerebral matter inflamed and softened, and it was this acute cerebral softening that caused the fever, the convulsions, and the muscular contractions, which made their appearance nearly a month and a half after the occurrence of the hemiplegia. Thus a new series of difficulties occur to increase the chance of an erroneous diagnosis. In such cases we must remember that tumours of the brain, by their situation and by the compression of surrounding parts, may induce inflammation, which then becomes the most important, and sometimes fatal, disease. It is not surprising that specific treatment fails to cure the cerebral affection in such cases, occasioned, though it be, by the syphilitic diathesis.

The problem becomes still more difficult when the patient suffers from some nervous or cerebral disease, and yet has no manifest symptom of the syphilitic diathesis. It is obvious that the difficulties in diagnosis must greatly increase when the syphilitic symptoms are separated from the disease of the nervous system by a long period of time. Such cases require the most careful and attentive research, not only into their history, but for any trace of the pre-existence of syphilitic affections on those parts of the body which are accessible to examination. There is a class of cases in which the presence of syphilis as a determining cause is too frequently overlooked, and for which the only efficient remedy is thus unemployed. An example will render this more intelligible. Suppose that we are called to see a young man, not above twenty-eight years of age, suffering from hemiplegia. In such a case, although there is no symptom indicative of syphilis present, the practitioner recognises, as the result of experience, that cerebral hæmorrhage in one so young is an exceedingly rare condition, and that paralytic, apoplecticiform seizures occur as the result of syphilis. He therefore inquires into the previous history, and finds that at some antecedent date there is good reason to believe that the patient has had syphilis. He is now in possession of a fact which may lead him to further researches, and eventually to a rational diagnosis. The treatment may finally confirm the decision, by rapidly relieving the morbid symptoms presented by the patient. In exceptional cases no satisfactory results, however, occur, even when the treatment has been both carefully and rationally conducted; allowance must be made for the effects which continuance of the lesion of the nervous system must have produced on the surrounding parts.

From what has been said, it may be inferred that a study of the history of any such case, with a thorough acquaintance of the various aspects under which syphilis may show itself, should enable the practitioner, in the majority of cases, to arrive at a decided and satisfactory diagnosis. We must not, however, forget the difficulties, which beset us, in tracing such histories, from the ignorance or untruth of patients.

Lastly, the comparison of doubtful cases with others which are analogous in all respects—with this exception, that in them the existence of syphilis, as a cause, has been demonstrated—may frequently afford us valuable assistance in making out our diagnosis.

It should not be forgotten that a patient who has never contracted the disease in its primary form may suffer all the sad and fatal consequences of syphilis; for the hereditary is quite as competent as the acquired form of the disease to produce affections of the nervous system.

The different elements of diagnosis must be drawn—

1. From previous symptoms of syphilis, which should always be sought out with anxious care.
2. From any existing symptoms of the diathesis.
3. Sometimes from the form and characters of the nervous affections.
4. From the comparison of the case in question with others already recorded.
5. From the results of specific treatment, allowing, on the one hand, for its occasional failure in undoubted syphilitic diseases, and on the other, for its success in various other complaints.

M. H. Collis ('Dub. Quart. Journ.,' xxxv, 1). Dr. Köbner, on auto-inoculability of syphilis ('Wien. Med. Halle,' 1863, p. 402). Prof. Sigmund, on syphilitic affections of the cervix uteri ('Spit. Zeit.,' 1863, pp. 51, 91, 99). L. Parker, on latent syphilis ('Med. Times and Gaz.,' 1863, ii, 6). E. Fournié, case of syphilis communicated by the Eustachian catheter ('Gaz. Hebdomadaire,' 1863, p. 426). Prof. Sigmund, on examination and observation ('Spit. Zeit.,' 1863, pp. 2, 18, 26). L. Marowski, on the social importance of syphilis ('Deutsche Klin.,' 1863, pp. 41, &c.). Case in which primary, secondary, and tertiary symptoms were present at one time ('Gaz. d. Hôp.,' 1863, p. 450). J. Marston, on the treatment ('Brit. Med. Journ.,' 1863, i, 186). Prof. Sigmund, on syphilitic affections of the mouth ('Wien. Med. Wochenschr.,' 1863, pp. 273, &c., and 'Brit. Med. Journ.,' 1863, ii, 378). M. Morel, on the local use of perchloride of iron in phagedenic ulcers ('Prag. Viertelj.,' 1863, iii, Anal. 28). P. Broca, report on the transmission of syphilis by vaccination ('Mém. de la Soc. de Chir.,' v, 575).

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J. F. Duncan, on syphilitic insanity and epilepsy ('Dubl. Quart. Journ.,' xxxv, 48). J. Slodkowski, Syph. Paraplegia ('St. Petersburg. Med. Zeitschr.,' v, 127).

D. Milroy on *Pulmonary diseases* and their relation to syphilis ('Army Med. Reports' for 1861, p. 423). W. Aitken, on pulmonary lesions associated with syphilis (ib., p. 432). Prof. Oppolzer, on syphilitic disease of the liver ('Wien. Med. Halle,' 1863, p. 231, &c.) O. Biermer, on syphilitic disease of the liver and spleen ('Schweiz. Zeitschr.,' i, 118). G. Budd, on the influence of a long course of nitric acid in reducing the enlargement of the liver and spleen, that sometimes results from the syphilitic cachexy ('Brit. Med. Journ.,' 1863, ii, 259).

Carbuncle.—A. Prichard ('Brit. Med. Journ.,' 1863, ii, 151).

Elephantiasis.—Mr. Butcher, ligature of the femoral artery ('Dubl. Quart. Journ.,' xxxv, 257).

Muscles.—M. Jobert, fungous growths from the synovial sheaths of the flexor tendons of the hand ('Gaz. d. Hôp.,' 1862, p. 502). Prof. Oppolzer, case of myositis, &c. ('Spit. Zeit.,' 1863, pp. 321, 329).

Lymphatics.—M. Leudesdorf, case of lymphatic fistula cured by digital pressure ('Arch. f. Klin. Chir.,' iii, 417).

Nerves.—Prof. Schuh, repeated resections of the radial, &c. ('Wien. Med. Halle,' 1863, p. 1, &c.); case of neuroma in the deltoid muscle (ib., p. 311), and on excisions, &c., of nerves ('Wien. Med. Wochenschr.,' 1863, p. 1, 17, &c.). J. Langer, on the infra-orbital canal (ib., p. 577).

Arteries.—G. F. B. Adelman, on the surgical pathology of the arteries ('Arch. f. Klin. Chir.,' iii, 1). M. Noir, ligature of the external carotid for a wound of the facial ('Gaz. d. Hôp.,' 1862, p. 595). A. Prichard, wound of the vertebral ('Brit. Med. Journ.,' 1863, i, 399). B. Howard, new mode of ligaturing the intercostals ('Amer. Med. Times,' 1863, i, 52). Mr. Higginson, ligature of the internal iliac ('Brit. Med. Journ.,' 1863, i, 254). G. W. Campbell, ligature of the gluteal artery for traumatic aneurism ('Brit. Amer. Journ.,' iii, 103).

ANEURISM.

Prof. v. Pitha treated a case of popliteal aneurism by forced flexion for a lengthened period without success, but finally succeeded in curing it by combining flexion with compression of the femoral; the duration of the treatment was about four months ('Allg. Wien. Med. Zeit.,' 1863, p. 130).

A case of arterio-venous aneurism, apparently the one discussed in the 'Year-book' for 1862 (p. 245), was treated by Nélaton, who opened the sac and tied the vessels above and below. The operation took not less than an hour and a half. Ten days later, hæmorrhage occurred from the upper end, but was arrested by the introduction of a small piece of sulphate of iron into the artery and compression. Ultimately the bleeding recurred, and the patient sank ('Gaz. d. Hôp.,' 1863, p. 394). P. Broca relates at length ('Gaz. d. Hôp.,' 1863, p. 453) an extraordinary case of arterio-venous aneurism at the bend of the elbow, with enormous secondary dilation of the brachial, axillary, and sub-clavian arteries. Owing to a slough forming on the sac, and hæmorrhage occurring, amputation was performed through the middle of the arm. As a preliminary measure, the axillary was ligatured; this

vessel was enormously dilated, larger indeed than the aorta, and its walls were very thin. As secondary hæmorrhage would, under such conditions, be certain to ensue, Broca punctured the artery immediately above the ligature with Pravaz' trochar, compressed the vessel three centimetres higher by the finger, and injected fifteen drops of the perchloride of iron. It is known that the blood begins to coagulate when in contact with the perchloride, in thirty seconds; in this case, no clot had been produced in ten minutes, evidently owing to the compression being imperfect, and the blood escaping in and out. A triple thread was passed under the artery, three centimetres above the first ligature, and thus the vessel could be somewhat raised, and accurately compressed. Twenty drops were now injected, and caused rapid coagulation, the whole of the space between the ligatures becoming filled with a very firm clot, larger than the thumb. The triple thread, for greater safety, was tied in a bow over a small roll of plaster, and not removed till the following day. On the amputation being performed, only one small artery in the bone bled. The patient died four days after the operation from a gangrene of the stump and wall of the chest, a gangrene very probably caused by clots furnished by the first injection. However that may be, Broca is of opinion that the idea which he has put into execution, the idea of protecting the ligature by means of a chemical clot, may receive useful application in similar cases, where it becomes necessary to tie very voluminous and diseased arteries. Experience has shown that, under such circumstances, secondary hæmorrhage is inevitable, and therefore some other means, more efficacious than the ligature, must be employed. From the point of amputation to the bend of the elbow, the artery was cylindrical, and uniformly dilated; its circumference measured eighty-six millimetres, and the humerus at the same level only sixty-eight millimetres.

C. Charnal, case of arterio-venous aneurism of the elbow ('Mém. de la Soc. de Chir.,' v, 202), and report by P. Broca (ib., p. 209). G. Lowe, case of quadruple external aneurism ('Med. Tim. and Gaz.,' 1862, ii, 382). C. de Morgan, case of rapid spontaneous cure of popliteal (ib., pp. 541, 568). M. Chassaignac, case cured by digital compression ('Gaz. d. Hép.,' 1862, p. 487). M. Vanzetti, cases treated by digital compression (ib., p. 519). E. Hamilton, aneurism of ulnar, &c. ('Dubl. Quart. Journ.,' xxxiv, 295). M. Leudesdorf, aneurism of the radial, cured by digital pressure ('Arch. f. Klin. Chir.,' iii, 415). Mr. Bickersteth, axillary aneurism treated by opening the sac ('Brit. Med. Journ.,' 1863, ii, 16).

EMBOLISM.

Prof. Panum, experimental researches on embolism ('Arch. f. path. Anat.,' xxv, 308, 433). From a long series of experiments he has found, that the heart continues its rhythmical contractions for several hours after the coronary arteries have been perfectly filled with a wax injection, a fact of some importance in regard to one interpretation of the effects of air passing into the veins. In sudden death from pulmonary embolism, the symptoms are the same as in death from cerebral

embolism,—tetanic spasms, paleness of the head, involuntary passage of the urine and feces, very deep inspirations, &c.; death is probably caused in both cases by the ischæmia of the brain. He found that bodies, such as wax pellets, which exercised neither a mechanical nor chemical irritation, became encysted in the lung, without any further change in the pulmonary tissue; nor did they, when combined with injection of putrid matters into the blood, excite lobular inflammation. Globules of quicksilver injected into the veins cause local inflammatory changes of the lung, as described by Gaspard and Cruveilhier; the inflammation is not, however, excited by the simple mechanical stoppage of the vessels, but by a specific action of the mercury on the surrounding pulmonary tissue. Emboli, composed of decomposing nitrogenous substances, excite inflammatory processes which may spread over large portions of the lung; they commence, however, from the point at which the plug is arrested, and accordingly the tissues are most affected, even gangrenous, close to the embolus, while at a greater distance resolution of the inflammation may take place. Perfectly fresh coagula of healthy blood, passing into the pulmonary artery, generally contract and disappear without producing any particular change in the tissue around them; they occasionally under special conditions excite lobular processes: septic changes in the blood exercise no influence in deciding the effects of such fresh coagula. Pus causes no coagulation of blood contained in the veins of the living body, even after long contact. Both miliary tubercles and acute phthisis much resemble, and are possibly caused by coagula acting as emboli in the pulmonary vessels. The injection of wax pellets, of air, or of quicksilver into the vessels of various parts of the body produced very different effects according to the particular arteries affected; thus, (1) paralysis of the posterior part of the body and red softening of the lower half of the spinal cord in embolism of the corresponding spinal arteries; (2) vomiting and diarrhœa, with enormous congestion of the portal vein, and the formation of ulcers in the stomach, which resembled the round gastric ulcer, and in the intestinal canal, affecting especially Peyer's glands, and resembling typhoid ulcerations—from embolism of the intestinal arteries; (3) putrid changes in the blood in consequence of partial gangrenous destruction of the mucous membrane of the bowels caused by embolism of the intestinal arteries; (4) tetanus, ending in death within two hours, from embolism of the brain and medulla oblongata, unaccompanied by any noticeable change in the nervous tissue; (5) eczema of the lips, gums, and muzzle, indisputably from the embolism of air-vesicles in the corresponding arteries; (6) falling-off of the hair, probably; and (7) ecchymoses of the skin, as in morbus maculosus Werlhofii, undoubtedly from embolism of the arteries of the skin; (8) very violent rheumatic pains, gradually advancing muscular paralysis, and destruction of the muscular tissue, in consequence of the embolism of quicksilver into the muscular arteries and the chemical irritation exercised by the metal on the muscular substance; (9) albumen and blood in the urine, with pathological changes of the kidney, in embolism of the afferent vessels and Malpighian bodies; (10) little extravasations from the portal vein, and the formation of solid bodies, spotted with yellow and red, attaining

even the size of a nut, attended by an intensely yellow hue, and partial destruction of the corresponding hepatic cells, from embolism of the hepatic artery; (11) some globules of quicksilver, which had probably stopped for some time in the heart, had become enclosed in coagula of blood; (12) infiltration, inflammation, and aneurismal dilatation of some of the arteries, into which such coated globules had passed.

The author notes, as the usual results of putrid poisoning of the blood, that the intestinal mucous membrane is very red from congestion and infiltration, and that the bowel contains a bloody slime.

Discussion on embolism ('*Med. Tim. and Gaz.*,' 1862, ii, 587). W. Cooper ('*Brit. Med. Journ.*,' 1862, ii, 488).

TRANSFUSION.

II. Demme, on the importance of transfusion in military surgery ('*Schweiz. Zeitschr.*,' i, 437).—A great field is open for the application of transfusion to cases of anæmia and exhaustion from hæmorrhage. In many cases severe primary bleeding is not only immediately dangerous, but also exerts a most injurious effect in promoting secondary, and especially parenchymatous, hæmorrhage. Another indication for its use in military surgery is furnished by the chronic anæmia from long-continued and profuse suppurations. It was on five such cases that Neudörfer of Prag operated, in 1859, during the Italian war, furnishing the first examples of the employment of this operation in military practice. It appears, however, that great deterioration of the power of assimilation, profuse intestinal catarrh, or far-advanced hectic fever contra-indicates its use. Finally, it will always remain of value, as a powerful stimulant, in nervous exhaustion, in syncope, &c.; it is not improbable that it will prove of much service in asphyxia from chloroform. On the other hand, among its dangers are the paralysis of the heart, often noticed by Brown-Séquard as a consequence of too rapid injection of blood, and the danger of causing congestion, and even rupture, of the blood-vessels in the lungs and other internal organs. The attempt of a recent writer, L. C. Morel, to re-introduce the immediate method must be considered vain, for the experiments of Dieffenbach had already shown that his method must be forever abandoned. Much more important is the question whether human blood alone must be employed; the experiments of Dieffenbach, Brown-Séquard and others have shown that the only danger is from a want of proportion between the size of the blood-corpuscles and the calibre of the capillaries, and that the transfusion of blood into an animal of another species has the same excellent effect, provided the blood-corpuscles are of equal size, or smaller than the calibre of the capillaries. Brown-Séquard refers some of the failures in previous experiments to the introduction of too large quantities of carbonic acid. Physiologists of importance, as Valentin and Vierordt, consider the innocuous use of animal blood in human transfusion to be an important discovery; and Demme thinks it will much facilitate its introduction into military surgery. Far larger quantities of blood can be injected, and the operation be repeated more frequently, than was formerly the

case. Blood, like that of the horse, the cow, and the sheep, can be used, in which the blood-corpuscles are less than the calibre of human capillaries. The transmission of dyscratic tendencies is much less to be feared; syphilis is entirely excluded. Denis and Emmerz in the seventeenth century, Blundell, Polli, and Esmarch ('Year-book,' 1862, p. 254), have employed such blood.

In the operation, Demme recommends that the vessel for receiving the blood should be made of wood. The veins at the elbow are those into which the blood should be injected. He opens the vein subcutaneously, by means of a canula, with a point like that of a quill pen; the canula must then be kept in its place by an assistant. His syringe is of glass, and has two apertures at the end; one with a conical valve opening inwards, admits the blood; the other with a similar valve opening outwards, allows its escape; by this means all danger of the entrance of air is precluded. Such an instrument costs from forty to fifty francs. The quantity of blood injected must vary in different cases; the practical rule may be to proceed in the first operation, until a sufficient effect has been produced, and for this purpose more than four or six ounces will rarely be necessary. Any repetition must depend on the degree and duration of the result obtained; at all events, it must, when necessary, be undertaken before the effect of the first operation has entirely subsided. In wounds of the viscera, it will be best to inject only a small quantity at a time, repeating the operation as often as may be necessary. The same vein can be used for the first repetition; at a later period it is better to choose a fresh spot. Cases are known, in which four to six transfusions have been performed, and quantities of five or six pounds of blood gradually injected.

The effects of transfusion are as follows:—The countenance begins to redden; the eyes become brilliant and more open; the pupils dilate; the conjunctiva sometimes becomes much congested; the lips redden; the heart contracts more energetically, and its pulsations are considerably increased in frequency; the pulse is fuller and more resistant; the temperature often augments several degrees, and is more uniform in different parts of the body; the respirations become deeper and more frequent; dyspnoea is rare, but deserves, unless it at once disappears, the most earnest consideration; the skin becomes turgescient and perspiring; sometimes there is profuse sweating; spasmodic twitchings of the lower extremities occasionally occur; in exceptional cases there is involuntary discharge of the urine and fæces; diuresis is for the next twenty-four hours not unfrequently increased; now and then patients speak of a general feeling of warmth and comfort running through them. The longer these phenomena continue, the greater is the hope of perfect success. Where they only last a few minutes, little can be expected even from a repetition of the operation.

G. Braun, on transfusion in anæmia ('Wien. Med. Wochensch.,' 1863, p. 305, &c.).

Veins.—J. Minkiewicz, on operations for varix ('Arch. f. path. Anat.,' xxv, 193).

Hæmorrhage.—M. Nélaton, gunshot wound of the hand, &c. (Gaz. d.

Hôp.,' 1862, p. 582). W. Detmold, on the use of towels instead of sponges in ligaturing vessels ('Amer. Med. Tim.,' 1863, i, 97).

Hæmorrhagic diathesis.—Dr. Grandidier, observations and researches since 1854—a critical review ('Schmidt's Jahrb.,' vol. 117, p. 329).

Narus, &c.—Prof. Zeissl, on the treatment by tartar emetic ('Med. Tim. and Gaz.,' 1862, ii, 445). M. Giraldes ('Gaz. d. Hôp.,' 1862, p. 493), and discussion (ib., p. 499). J. C. Wordsworth, the hot needle ('Lane.,' 1863, i, 294). M. Bertherand, ligature of the carotid for an erectile tumour of the scalp ('Brit. Med. Journ.,' 1863, i, 511). M. Delore and A. Richard, case of cirroid aneurism ('Gaz. Hebdom.,' 1863, p. 365). H. Demme, an analysis of Porta's monograph ('Schweiz. Zeitschr.,' i, 165).

Tumours.—The first volume of a comprehensive work on tumours by R. Virchow (pp. 543, Berlin, Hirschwald). R. Quain, on recurrent fibroid ('Med. Tim. and Gaz.,' 1863, ii, 135). A. Hermann ('Prag. Viertelj.,' 1863, i, 126; ii, 20; iii, 101). T. Bryant, clinical report on tumours ('Guy's Hosp. Rep.,' 3rd series, ix, 212). Mr. Hart, on cysts at the back of the knee ('Med. Tim. and Gaz.,' 1862, i, 377).

BONES.

H. Demme, the diagnosis and treatment of diffuse spontaneous osteomyelitis ('Arch. f. Klin. Chir.,' iii, 169.)—Whilst osteitis, in a strict sense, or inflammation of the proper osseous tissue has been only recently proved to exist, it appears that the older surgeons recognised an inflammation of the vascular tissues in the centre of the long bones in opposition to periostitis. They, however, studied it exclusively in connection with direct injuries of the medullary canal, especially comminuted fractures and amputations; and Chassaignac (1853, 1859) was the first to accurately define and study anatomically and clinically the spontaneous or essential osteomyelitis, which occurs independently of any separation of continuity of the bones. In recent years, German writers have occupied themselves especially with inflammatory separation of the epiphysis, an affection which they considered identical with the osteomyelitis described by Chassaignac. The former affection is, however, by no means necessarily connected with inflammation of the medullary tissues, of which it forms an important, but only occasional, complication; thus, according to present experience, it occurs as a consequence of periostitis attacking the lower third of the femur in youthful individuals; 2, as a result of an acute inflammation of a joint in young persons; 3, in connection with a circumscribed inflammation of the epiphysis; and, 4, after either circumscribed or diffuse osteomyelitis.

It is of importance to separate the circumscribed from the diffuse form of osteomyelitis, for the former, in connection with abscess of bone and tubercle, has been far better studied than the latter, is an essentially different disease from the one described by Chassaignac, is in respect to its development, course, and the participation of the rest of the organism a local affection, which, diagnosed early, may end in recovery, and in which the mortality from pyæmia, septicæmia, and

hectic, is relatively small. On the other hand, the diffuse form, which was denominated by Chassaignac "typhus des membres," is a far more serious affection; it always threatens the life of the bone, usually produces most grave constitutional disturbance, and often, when acute, endangers life by pyæmia and septic poisoning, when chronic, by exhaustion.

In the present essay the author treats only the spontaneous diffuse osteomyelitis of the *femur*, because it is the form most frequently observed, is admitted by all authors to be the most dangerous, and was least accurately and minutely described by Chassaignac. A most important foundation for the anatomy, pathology, and treatment of the disease, is furnished by seventeen cases, observed and carefully reported by the author, who has supplemented them by various other macroscopical and microscopical examinations of bones, and by the study of the different works bearing on this subject.

Pathological anatomy.—There is rarely an opportunity to examine the hyperæmia which accompanies the commencement of a spontaneous osteomyelitis. The redness is then mostly diffuse, uniform, more rarely in isolated spots; the medulla, which in the normal condition does not completely fill the canal, closely presses against its walls; the hyperæmia is rarely limited to the marrow of the central canal, but extends through the cancellated tissue as far as the cortical layer. At this time effusions of blood are generally found both in the medullary canal, and in the cancelli of the spongy bone; some of them arise from traumatic causes or rheumatic congestions, others from partial obliterations of vessels. At a later period extravasations occur from the walls of vessels becoming ulcerated. By imbibition and the development of pigment, changes in colour are usually induced at an early period; they have, by many authorities, been considered the result of septic inflammations. The duration of the stage of congestion varies in different cases. The most common terminations of the circumscribed form are suppuration or tuberculization; cases are, however, by no means rare, in which osteoporosis and sclerosis result.

Many authors confound the changes produced by osteomyelitis with those arising from genuine osteitis and caries. The author considers it important to remember that the changes in the osseous tissue which are denominated caries, must be anatomically referred to two different processes:—1, to primary changes and proliferations of the medulla (the term being understood in its widest sense), and especially of the connective tissue accompanying the vessels in the Haversian canals. This process is one of interstitial osteomyelitis (in opposition to the central osteomyelitis essentially limited to the tissue of the central medullary canal); 2, to a proliferation of pus-cells, or of granulations proceeding from the bone-cells (bone-ulceration in the sense of Virchow). Clinically these forms, owing to their mutual combinations, cannot be distinguished.

In respect to diffuse osteomyelitis, the author states—(1) that there is a pure osteomyelitis diffusa, causing suppuration, tuberculization, necrosis, or sclerosis, which is anatomically allied to the circumscribed form, and only differs from it by the wider extent of the disease, by

the more frequent implication of an adjacent joint, and by the serious general symptoms.

(2) There is a diffuse thrombosis of the veins of the bone, which, in analogy to similar processes in the soft parts, should be distinguished from osteophlebitis; it is for the bones the analogue of phlegmasia alba dolens, and may end in phlebitis and periphlebitis of the veins of the bone.

(3) In both forms putrid decomposition, with its further consequences, and the symptoms of septicæmia, may sometimes be observed (osteomyelitis septica).

(4) Both forms may lead to purulent metastasis. There is, however, no necessary connection between pyæmia and any form of osteomyelitis.

The author, in his description, especially notes two of the pathological changes accompanying pure diffuse osteomyelitis, the periostitis and the disease of the adjacent joint.

The former generally possesses the same characters as the changes of the medulla; thus it is usually purulent. The pus is deposited to the outer side of the periosteum, in its tissue, or between it and the bone; and it may, as in genuine osteomyelitis, undergo tuberculization or putrid decomposition. Chassaignac supposed that the pus, produced by the periostitis, accompanying inflammation of the medullary tissues, was peculiarly characterised by its containing large quantities of oil-globules. The author states that such a symptom is quite accidental, and often absent. Fibrous inflammation of the periosteum accompanies principally dry proliferations of the marrow: the exudation ultimately changes into a fibrous layer, as hard as cartilage, and so closely connected with the periosteum, that no distinct limit can be perceived. The author has only studied one case of hæmorrhagic periostitis. Osteoplastic inflammation of the periosteum has been mentioned by most authors only in connection with necrosis, but the author's experience proves it to be of frequent occurrence, and the constant accompaniment of recovery, whether necrosis has occurred or not. The latter is certainly rarer than is generally supposed. The author's cases prove that even in the purulent forms it is by no means a *conditio sine qua non* of recovery.

In respect to the frequency of the characteristic joint-disease accompanying spontaneous diffuse osteomyelitis, the author agrees fully with Chassaignac, but not in regard to the joint affected. For whilst the latter asserts that the more central joint is always attacked, the author found in his seventeen cases of osteomyelitis femoris, the knee always affected, with the exception of a solitary case, in which the hip suffered. According to his examinations, the disease of the joint occurs in the following forms:—1. Very often in that of an acute œdema, a dropsy of the joint from the increased pressure in the capillaries and veins of the synovial membrane, which results from thrombosis of the veins of the bone and periosteum. 2. Empyema of the joint is very frequently found, owing to superficial suppuration of the synovial membrane; it may retrograde, even without the pus being discharged externally, and the power of motion may be tolerably restored. 3. Deeply-penetrating destructive inflammations of the joint, in which no direct transmission of the process through the epiphysis can be found; they appear to depend on embolism,

generally occur suddenly, and are attended by characteristic general symptoms. 4. The ulcerative process in the medullary canal penetrates the epiphysis and cartilage, and thus the joint-affection is directly excited by the osteomyelitis. The two latter forms generally end in partial or total, fibrous or bony ankylosis, if life is prolonged over the stages of suppuration and putrid decomposition.

Partial separation or loosening of the epiphysis is far more frequent than the total disunion almost exclusively mentioned by writers. Especially is this the case with the femur, where in seventeen cases the author only had two in which total separation, with free motion of the inferior epiphysis, was perceived. In both cases reunion from the formation of callus and increased length of the extremity resulted. In six other cases the separation was only marked by slight mobility, and at a later period by a little angular bend. Secondary separation of the superior epiphysis of the tibia is more frequent than the total separation of that of the primarily diseased femur, and is also far more often total. Separation of the epiphysis can, of course, only occur before its union by bone with the shaft; it is induced by the morbid process attacking the intermediate cartilage. The large abscesses, which generally form at the inner and posterior surface of the thigh, are more rarely accompanied by necrosis, than is stated by authors; nor is the spontaneous communication between the intra- and extra-periosteal collections of pus, nor the putrid decomposition of the matter so constant as supposed by Klose. The phlebitis of Klose includes two processes—that of thrombosis and that of phlebitis. The diffuse, spreading stoppage of the medullary veins can be most accurately followed in cases of traumatic origin. When large collaterals are obstructed, the symptoms are very marked—a deep periosteal œdema, a serous effusion into the adjacent articular cavity, are combined with a dirty, pale, doughy, painful swelling of the skin and subcutaneous cellular tissue. Should phlebitis ensue, diffuse suppurations appear in the place of the simple œdematous infiltration, the destructive processes of ulceration and mortification almost entirely prevent reparative action, and pyæmia or septicæmia usually result.

Causes.—According to the author's experience, spontaneous diffuse osteomyelitis is by no means a rare disease. It was preceded, not unfrequently, by over-exertion. All the patients belonged to the poorest class, and were of debilitated, unhealthy constitution; the age varied from thirteen to twenty-five years; in twenty-three patients there were seven females. Active nutrition and relative congestion of the epiphyses form certainly an essential pre-disposing factor, which may be increased at any given time by more rapid growth. The femur is attacked far more frequently than the other long bones (73·369 per cent.), and the left more frequently than the right one (eleven out of seventeen cases). The author has rarely met with cases in which a number of bones were affected; he has almost invariably seen the disease only spread across the joint to the next bone, thus from the femur to the tibia; only in rare cases has he found it affecting distant bones.

Symptoms and course.—Klose's division into three stages is quite artificial, and must be rejected. Chassaignac and his followers did not

sufficiently distinguish the symptoms peculiar to the disease and those dependent on septicæmia and pyæmia, and accordingly gave an untrue representation. One of the most constant and important symptoms of the commencing disease is the violent, deep-seated pain, generally limited to a distinct spot, but by no means always to the neighbourhood of the epiphysis; indeed it is not uncommonly referred to the middle of the thigh, or even further. The character of the pain is very variously described by patients; it is always, however, increased by the least pressure; its continuance for a lengthened period, even after extensive incisions, and its situation deep in the interior of the bone, are important symptoms. A more or less characteristic functional disturbance is usually observed contemporaneously with the occurrence of the pain; the extremity can no longer be raised, the patient complains of a sensation of great weight, and as if the leg would break when he attempts to raise it. At first, he usually lies in bed stretched out, at a later period almost always flexed. Between the third and eighth day there generally appears a swelling, which is at first indistinct and diffuse, and usually placed in the lower third of the thigh, though soon extending in every direction. The surgeon may, however, generally make out with certainty a doughy, œdematous infiltration of the skin and subcutaneous cellular tissue, and a firm swelling springing from the bone. So far, there has been no increase in the temperature, no inflammatory discoloration: these appear only at a later period, and in many cases not till a gradually enlarging abscess approximates to the skin. So long as the acute œdema remains, there is a dirty, earthy paleness, with more or less markings of the veins. A diffuse abscess may often be discovered at the end of the first, or in the course of the second week; spontaneous discharge of the matter rarely follows. The affection of the joint does not, as the rule, appear before the end of the second week, and more frequently not till after the third week. An intense fever, sometimes with repeated rigors, mostly with sleeplessness, headache, delirium, loss of appetite, red, dry tongue, &c., soon follows the local pain. A diphtheritic affection of the mouth was only observed in one case. The uniform course of the fever may be interrupted at any time by rigors, which are excited by embolic closures of vessels, bursting of an abscess into a joint, secondary abscesses, hypostatic inflammatory processes, &c. The whole appearance of the patient shows even in the first week the seriousness of the affection. The further course varies, according as the case ends in recovery, and then usually with a very protracted convalescence, or in death from pyæmia, septicæmia, or hectic. The appearance of the tissue found on the examination of incisions carried down to the periosteum for the discharge of the pus or ichorous matters, varies at different periods of the disease. Separation of the epiphysis occurs most frequently in the tibia, and usually happens in the second month. Its first symptom is for the most part discoloration caused by the pressure of the head of the bone; it is associated in many cases with a doughy swelling of the skin; both the discoloration and swelling are, as the rule, located at the inferior part of the popliteal space, and at the front, in the region of the ligamentum patellæ, there is a saddle-like depression.

As to the *diagnosis*, the author cannot agree with those who hold it impossible to recognise the disease till after division of the soft parts; he therefore recapitulates the symptoms in short once more, and shows that they almost always suffice for a satisfactory diagnosis. He lays special weight on the history as a means of distinguishing primary from secondary phlegmon or periostitis. Acupuncture ('Year-book,' 1862, p. 258) and examination with the trochar may, even at an early stage, decide as to the condition of the bone.

Treatment.—In opposition to other surgeons, who vehemently recommend immediate and free division of the soft parts down to the bone, Demme considers it a rule, that free and deep incisions should never be made during the acute, progressive stage of osteomyelitis diffusa, not until the disease has become stationary or chronic. This maxim finds its justification in the clinical experience and pathological researches of the author. Thus, the first indication for treatment is to induce as soon as possible, a more quiescent chronic course, which is a necessary condition for the success of any ulterior incision. General and local bloodletting, poulticing, and blistering are quite uncalculated to diminish the acuteness of the process; the author has had no personal experience of cauterisation or of the assiduous use of cold. On the other hand he has had abundant opportunities to observe the decided action of iodine, locally applied, in cases of osteomyelitis at every stage. He employs a solution of iodine, containing sixty to sixty-five grains to the ounce of alcohol (96—98 per cent.); it is applied by a brush till an intense, bluish-black colour is produced, and always over a larger space than that of the disease; he covers it with cotton-wool or wadding, or with a compress soaked in common oil to alleviate the pain; should vesication occur, he uses lead, alum, or opium solutions. The iodine must be painted on at least every second day. The author's experience is yet insufficient to decide as to temporary, subcutaneous evacuations of the pus by means of the trochar. A fundamental part of every treatment must be perfect rest of the whole limb, obtained by an immoveable bandage. The general treatment should be at first antifebrile, but yet not too active. As soon as the stationary period of the morbid process has commenced, the second part of the treatment must be initiated by a free, deep division of the soft parts. The aperture must be generally made between the adductors, the gracilis, semimembranosus, and semitendinosus, or between the vastus externus and the biceps. The length of the incision averaged in the author's cases five to twelve inches; the depth must depend upon circumstances. The aperture is best made by cauterisation with the actual cautery, or the zinc paste; the use of the bistoury is objectionable, owing to the greater loss of blood, and the greater danger of pyæmic or septicæmic infection. It will be well, at all events, to cauterise the wound, when the knife has been employed. Chlorine and iodine injections, &c., are afterwards indicated.

Numerous facts prove the utility of directly opening the medullary canal by trepanning, in circumscribed suppurative osteomyelitis. The resulting necrosis requires the ordinary treatment; the joint-disease, principally a firm bandage and the local use of iodine; opening the joint can often be avoided. Methodical employment of passive motion is ad-

missible only where the epiphysis is perfectly fixed. As to the treatment of separation of the epiphysis, the prevention of any displacement, the arrest of any progressive wearing-away of the fragments—indications which may be fulfilled by proper splints and bandages, though most securely by the plaster bandage—are the conditions most favorable to fibrous, ossifying union. The general treatment during the second period must be tonic and strengthening; nutritious food, cod-liver oil and iron; the condition of the digestive organs must be very carefully watched.

Amputation must yet be considered one of the means of treatment; performed at a late period during the chronic stage of the osteomyelitis, it presents greater prospect of success, than when the limb is removed during the acute, progressive stage, as recommended by Chassaignac.

Prognosis and duration.—Of the seventeen cases related by the author, thirteen perfectly recovered (76.47 per cent.). Death resulted twice from pyæmia and twice from exhaustion; in one case it occurred so early as the fifteenth day, notwithstanding amputation; in the three other cases on the thirty-fourth, seventy-sixth, and one hundred and thirty-eighth day after the commencement of the attack. The prognosis is rendered unfavorable even in the most promising cases by the long duration of the process, and the necrosis which often takes months, or even years, to become complete. The shortest period in which recovery occurred, was ninety-six days, the longest 290 days, calculating only the time from the beginning of the disease to the discharge of the patient. In one case, the necrotic process resulting from osteomyelitis was prolonged for upwards of ten years.

Prof. Pitha, on the treatment of necrosis by operation ('Allg. Wien. Med. Zeitung,' 1863, p. 73, &c.). The author removed in the year 1839, the whole fibula with both epiphyses from a girl of 15, and in another case the whole tibia, for necrosis after acute periostitis; the cavity left in the first case, though of great size, rapidly filled up, and new bone was formed to a sufficient extent to take the place of the former fibula; in the second case a steel splint was substituted in place of the tibia, and the patient was thus enabled to walk.

In the metatarsus and metacarpus, necrosis is often complicated with osteoporosis; the first and fifth metatarsal bones are those that most often require operative treatment. As a result of inflammation which has been caused by injury, or arisen spontaneously, the bone enlarges, and the appearances are such, especially in the case of the metatarsal bone of the great toe, that the adjacent bones may be supposed to be diseased; such a case might be supposed to indicate a Chopart's amputation, the whole anterior part of the foot being apparently implicated. Such errors may be avoided by the careful use of the probe, and by attention to the fact, that the fistulous apertures, however numerous, are situated along the diseased bone. In three cases treated at the military clinic, the first metatarsal bone was found to be much enlarged, in part affected by sclerosis, and covered with osteophytes, in part broken up into larger and smaller fragments; in these cases the whole bone was carefully removed, the periosteum being injured as little as possible, and the great toe preserved. Such an operation is by no means easy, owing to the difficulty of dissecting out the long plantar process of the

base of the bone, and the danger of wounding the plantar artery; the latter injury must be most carefully avoided, because it is almost impossible to ligature the vessel owing to the depth and narrowness of the wound, and plugging frustrates the conservative aim of the operation. It is only by keeping within the periosteum whilst separating the bone, a proceeding very troublesome in this case, that such a mishap can with certainty be avoided,—the subperiosteal method is therefore decidedly the one to be adopted. Since, however, the necrosis is quite peculiar in its form, at least has been in the six cases which the author has seen, a more simple method, by which the very tedious separation of the bone from the scaphoid might be avoided, would probably answer. In all six cases, the excised bone was found to be indurated and thickened towards each extremity, at its middle to contain a cavity as large as a nut, in which were fine, granular detritus, and fragments of dead bone. This cavity always communicated with an adjacent fistula. It would probably suffice to excise this central portion alone, for the rest of the bone, though not healthy, still appears capable of living, and the essential disease, from which the ulceration proceeds, is limited to the cavity; it might be sufficient even, in favorable cases, to merely clear out the cavity (*évidement* of Sédillot). The author intends to try such a simple method in his next case.

Necrosis of the jaw, and especially of the lower jaw, is a subject of great interest. Circumscribed partial necrosis requires simple extraction; the only point to be mentioned is, that the operation should, as the rule, be performed from the interior of the mouth, and therefore be commenced with detaching the gum, the exception being where large, external fistulæ render it useless to spare the skin of the face. The side of the face is not uncommonly so much swollen in cases of very limited necrosis, that the whole half of the bone is considered to be quite dead, and the error is not discovered till the bone has been laid bare. Such an error might have most unfortunate results for the patient. Extensive incisions might be made, or even a large flap dissected up, before the slight extent of the disease is discovered. The simplest and least injurious manner of determining the extent of the disease is by detachment of the mucous covering, a proceeding which does not in the least compromise the completion of the operation.

A soldier, æt. 24 years, was admitted into the military clinic, with periostitis of the lower jaw, said to have been caused by the extraction of a carious molar tooth. There were two apertures in the neck, through which the bone could be felt to be bare to a considerable extent; the disease made rapid progress, and in a short time the whole of the right side of the lower jaw had become so swollen, that no doubt seemed to remain that the necrosis extended as far as the joint. A most careful examination appeared to show the necessity of dividing the jaw in front of the second bicuspid, and exarticulating. In accordance, however, with the principle just given, the operation was commenced by separating the gum from the outer side of the alveolar process; the periosteum was also dissected off as far as the angle of the jaw; it was then clear that the necrosis was limited to the external lamella and a little part of the alveolar process, so that the operation ended in a simple extraction of

these parts, the continuity of the bone being perfectly preserved. Recovery followed in the simplest way, and without the least disfigurement. If, on the other hand, the necrosis had extended as far as the external swelling appeared to indicate, and to more than the outer lamella,—if, moreover, its limits had not yet become distinct,—so as to necessitate the removal of the whole of that portion of the jaw, the next step would have been to detach the gum and periosteum from the inner surface as far as the lower margin of the bone, carrying the separation of the periosteum and muscular attachments up the ascending ramus, and then to saw through the bone anteriorly with the chain saw. The piece is then to be dragged forwards by means of forceps, any parts still adherent to be separated, and the ramus again divided, or exarticulation may be completed without difficulty. The whole half of the jaw can in this way be removed without any external incision, and without injury to the surrounding soft parts. This method of intrabuccal exarticulation and resection (Larghi) is the very perfection of operative surgery; it may also be applied to the upper jaw. Little or no deformity is caused by such an operation, for the soft parts remain after removal of the bone almost in their natural position. Unfortunately such an operation is scarcely applicable to any but cases of necrosis; in this affection it is indisputably indicated. The author is not in favour of delaying the operation very long, for the patient loses strength, and the necrosis spreads further and further.

Among other interesting cases one is related of phosphorus disease, in which Pitha succeeded in removing the whole of both upper jaws, without making any external incision, and without producing any subsequent deformity.

Osteitis.—F. Lorinser, on the treatment ('Wien. Med. Wochenschr.,' 1862, p. 641). M. Verneuil, case of acute osteomyelitis, treated by incision, and amputation at the shoulder-joint ('Gaz. d. Hôp.,' 1863, pp. 74, 87, 88). W. Roser, on periostitis and osteomyelitis ('Arch. d. Heilk.,' 1863, p. 281).

Necrosis.—T. Smith, on acute necrosis of growing bones ('Brit. Med. Jour.,' 1863, ii, p. 51, &c.). Dr. Voss, almost total necrosis of the lower jaw in a child, successful removal ('Amer. Med. Times,' 1863, ii, 194).

Exostosis.—M. Maisonneuve, case of exostosis of the ethmoid ('Gaz. d. Hôp.,' 1863, p. 458).

Tumours.—M. Legonest, resection of the lower part of the fibula, &c. ('Gaz. d. Hôp.,' 1862, p. 519). E. Nélaton, on myeloid tumours (ib., 1863, p. 25). Mr. Paget and Mr. Syme, on removal of the scapula ('Med. Times and Gaz.,' 1863, i, p. 6; 'Edinb. Med. Journ.,' viii, 951).

Caries.—M. Notta, on the use of the "liqueur de Villate" ('Gaz. Hebdom.,' 1863, p. 172).

Lateral curvature of the spine.—Pamphlets by C. Pravaz (Paris, V. Masson), J. Wildberger (Leipz., Weigel), and, F. R. Nitzsche (2nd ed., Dresden, Klemm). W. Adams ('Med. Times and Gaz.,' 1862, i, 527, 579.) &c. H. H. Bigg, spinal curvature, the mechanical appliances for its successful treatment (Lond., Churchill). Dr. Eulenburg, lateral curvature of the spine, its origin, prevention, and

cure ('Jour. f. Kinderkr.,' vol. xxxviii, p. 1), and cases of scoliosis and of displacement of the scapula (ib., p. 322).

Pott's curvature.—M. Michel, on the treatment of abscess from caries of the vertebræ ('Mém. de la Soc. de Chir.,' v. 395). J. A. Wood, mechanical appliances in Pott's disease ('Amer. Med. Tim.,' 1862, i, 79, &c.). Case of operation ('Edinb. Med. Jour.,' vii, 781). Actual cautery in disease of the cervical vertebræ (ib., viii, 135).

Spina bifida.—C. Rindfleisch ('Arch. f. path. Anat.,' xxvii, 137). M. Giraldes ('Gaz. d. Hôp.,' 1862, p. 477, &c.). M. Depaul ('Gaz. d. Hôp.,' 1863, p. 13).

FRACTURES.

F. H. Hamilton, 'A Practical Treatise on Fractures and Dislocations,' 2nd ed., pp. 750, Philad., Blanchard and Lea, 1863.

In a case of compound fracture of the leg with simple fracture of the corresponding thigh, Prof. Pitha determined on preserving the limb; chloroform having been administered, he covered the wound with a little charpie, and at once applied the splints. He strongly recommends such a plan of treatment; no time should be lost with cold lotions, ice, or leeches; the splints act as the best antiphlogistic, and at once relieve the pain of the injury ('Allg. Wien. Med. Zeit.,' 1863, p. 237).

Dr. Biederlack has somewhat modified an old method of applying counter-extension in fractures of the femur ('Deutsche Klin.,' 1862, p. 509). A well-padded girdle of leather or elastic material, from which on both sides thigh-straps pass round the inguinal and gluteal regions, as in a truss, is buckled round the hips. On each side of the girdle is a ring, through which a cord is passed, and then fastened to the side of the bedstead. The patient bears such a bandage very well, provided a thick layer of wadding is placed under the thigh-straps.

R. Davies gives a description of Dr. Gordon Buck's extension apparatus, and of Dr. N. Smith's anterior splint, as employed in some of the American military hospitals for compound fractures of the femur from gunshot wounds ('Lanc.,' 1863, i, 629). B. B. Miles records four cases of gunshot fractures of the femur, treated with Smith's anterior splint ('Amer. Med. Times,' 1863, ii, pp. 14, 26). E. G. Waters records some cases of gunshot fractures of the thigh treated conservatively (ib., 1863, i, pp. 170, 184). "The writer regrets that he is not able to give the exact number of amputations performed for this injury, but is able to state positively that only one patient recovered of the many who underwent the operation. In this case the operation was performed in the upper third of the thigh." There were three cases of resection of the femur, but "all died within a fortnight after the operation, and the autopsy in each case revealed the melancholy fact that nature had made no attempt at reparation." Three died out of fourteen cases, in which an attempt was made to save the limb; nine were discharged from hospital, already using their injured limbs in standing, and walking with considerable facility. "The remaining two of the fourteen continue under treatment. One of them goes out daily on crutches, the

other is confined to bed with a slight discharge. The union in both is perfect, their general health excellent, their spirits buoyant, and it requires no excess of professional confidence to be convinced that only a short time will elapse before both patients will be completely restored to health, and will enjoy valuable use of their limbs." He speaks in very enthusiastic terms of Smith's anterior splint.

D. C. Peters ('Amer. Med. Tim.,' 1863, i, 233) and J. T. Hodgen (ib., p. 208) are both in favour of conservative treatment in compound fracture of the shaft of the femur. The latter states that "since the 20th day of September, 1861, there have been received at this hospital (City General Hospital, St. Louis, Mo.) sixty-five cases of gunshot fractures of the shaft of the os femoris. Of these, eighteen have died, four remain under treatment (two of whom are walking with canes, the other two in a fair way to recover), and forty-three have recovered, and left the hospital with good limbs, except one, and that one has a limb far better than 'Palmer's best' substitute. It will be observed, that the per-centage of mortality is less than twenty-eight, thus giving better results so far as life is concerned than amputation of the thigh would do, besides preserving useful limbs. These injuries were not all inflicted by conical leaden bullets, a part being by grape, canister, and the round leaden bullet. From my observation I would say gunshot fractures of the shaft of the femur made by conical leaden bullets *do not* demand amputation, except when associated with injury of the nerve or artery."

D. P. Smith describes a new splint for fractures of the femur ('Amer. Med. Times,' 1863, i, 111). He says, "in my cases of shattered limbs, I use a slat of pine wood extending from the crest of the ilium to just beyond the sole of the foot. It should be about two inches wide and half an inch thick. A similar stick runs up on the inside of the limb to the perineum. Join the two by a cross-piece below the sole of the foot, and by a cross-piece passing in front of the thigh just below the perineum; suspend the limb in this by separate strips of bandage passing under the limb, then over the two sides of the cradle, and the ends tying in a bow-knot; suspend the splint from above, so that the whole limb and its dressings may swing clear of the bed; change the tension of this or that muslin strip until the limb lies easy; lead the cords that suspend the splint a little downwards so as to make any *necessary* extension; raise the foot of the bed an inch or two to furnish counter-extension if needed; and you have my idea. In no other way can an excised knee or gunshot fracture of the femur be so completely cared for. One will see at a glance that the limb can be most completely cleansed and dressed without stirring it in the slightest." *

M. Duparcque, on inequality in the length of the upper limbs in reference to fractures ('Gaz. Hebdomadaire,' 1863, p. 55). E. Gurlt, statistics ('Arch. f. Klin. Chir.,' iii, 393). M. Gosselin, on fractures in V, or wedge-shaped ('Mém. de la Soc. de Chir.,' v, 147). M. Bouvier, on the immoveable bandage (ib., p. 175). Mr. Spence, case of fracture with dislocation of the humerus ('Edinb. Med. Journal,' viii, 1084);

* It is worth remark, that the apparatus here recommended is the bed in miniature, that was long since used by Corrigan in fever cases.—T. W.

Discussion on gunshot fractures ('Amer. Med. Tim.,' 1863, i, p. 151, &c.).

Ununited and badly united fractures.—M. Denucé ('Mém. de la Soc. de Chir.,' v, 501). Case under Dittel cured by rubbing the ends together, &c. ('Spit. Zeit.,' 1863, p. 114). Resection of a badly united fracture of the clavicle ('Gaz. d. Hôp.,' 1863, p. 449). Dr. Lunniczor, resection and the metallic suture ('Wien. Med. Wochenschr.,' 1863, pp. 673, 691). Mr. Spence, fracture of the neck of the *scapula*, with post-mortem examination ('Edinb. Med. Journ.,' viii, 1083). B.-Séguard, on trephining in fracture of the *spine* ('Lanc.,' 1863, i, 477).* H. A. Potter, on fractures of the spine ('Amer. Med. Tim.,' 1863, i, 17). M. Mélays, case of fracture of the clavicle by muscular contraction ('Gaz. Hebdom.,' 1863, p. 684).

Joints.—M. Bouvier, on white swellings ('Mém. de la Soc. de Chir.,' v, 175). D. C. Peters, on gunshot wounds ('Amer. Med. Tim.,' 1863, ii, 155). J. T. Hodgen, new splint for gunshot fractures of the femur and tibia (ib., p. 169). L. A. Sayre, new operation for artificial hip-joint in bony ankylosis ('Amer. Med. Tim.,' 1863, ii, 232). J. Hilton, on disease of the *sterno-clavicular* joints ('Lanc.,' 1863, i, 85); and on that of the *coccygeal* joints (ib., 1862, ii, 471). R. Barwell, lectures on disease of the *hip-joint* (ib., 557, &c.). R. Davies, on disease of the *hip-joint* (ib., 644). L. A. Sayre, on tenotomy in hip disease ('Amer. Med. Tim.,' 1863, i, 219). L. Labbé, on coxalgia (pp. 140, and 3 pls., Paris, A. Delahaye). W. Busch, on contractures of the hip and *knee* ('Arch. f. Klin. Chir.,' iv, 50). Prof. Schuh, on disease of the *knee* ('Spit. Zeit.,' 1863, p. 122).

DISLOCATIONS.

Prof. W. Busch has published some contributions to our knowledge of the mechanism and methods of *reduction of dislocations*, founded upon cases occurring at the Bonn Clinic ('Arch. f. Klin. Chir.,' iv, 1). It has become, during the last few years, more and more certain that the difficulties of reduction dependent on the muscles have been much over-estimated, and on the other hand, that those arising from tension of the capsule have not been sufficiently appreciated. No doubt the muscles may oppose enormous resistance; it is indeed for this reason that chloroform is of so much value in attempts at reduction. Thanks to this agent, all difficulty caused by active muscular contraction is now entirely removed, and thus the reduction of dislocations has been very much facilitated.

Yet, under the use of chloroform there still remains the resistance which arises from the tension of muscles, so displaced from their usual position, that their points of attachment are at a greater distance from one another than in the normal condition; for this reason it has been recommended to bring the limb as much as possible into such a position as would relax the tense muscles. The tension, however, which is caused by the elasticity and stretching of the muscles, never presents any very

* See also 'Brit. and For. Med.-Chir. Rev.,' vol. xxix, p. 378, and Schmidt's 'Jahrb.,' vol. 115, p. 332. More recently still, E. Gurlt has published a very full account of the present state of this question in his work on fractures, vol. 2, pp. 172-189.

formidable obstacle; indeed, in some cases, reduction is more readily effected by methods in which the muscles which are already tense are rendered yet more so. Finally, in some rare cases, great importance has been assigned to the resistance of certain muscles, which were supposed to hold the dislocated portion like a button in a button-hole; such a supposition was induced by cases in which reduction could not be effected, even by violent force, and in which, after death, the head of the dislocated bone was found to be held between tense muscles; thus, in a case of luxation of the femur backwards, where the head was placed between the pyriformis and obturator. Further experimental researches have, however, shown that such muscular button-holes are for the most part imaginary, and that the obstacle to reduction really depends on very different parts, the capsule and its accessory ligaments. Were the pyriformis and obturator to impede reduction, great force would rupture them, owing to their tenseness. The extension applied does not, however, act on them, because its force is broken by the resistance of the ligaments, a resistance which it cannot overcome. In most unreduced dislocations failure has been owing to the use of unfit methods, and not to the resistance of the muscles. Every one knows the case of Lisfranc, in which such a button-hole was supposed to be the obstacle, and where, after death, the use of a proper method effected reduction with the greatest ease. On the other hand, it cannot be denied that, in some dislocations, the resistance of the capsule to extension in a certain direction is increased by the tension of the muscles, as in dislocation of the hip on to the pubis, when the head lies under the psoas and iliacus. This muscle resists extension of the extremity in the direction of the longitudinal axis of the body, just in the same manner as the capsule, an artificial difficulty, however, which can be avoided by the employment of a proper method.

For the very reason that we can now eliminate almost all the resistance of the muscles by the use of chloroform, much more attention has been recently paid to the tension of the capsule and the form of the bones as obstacles to reduction. Since Malgaigne pointed out the importance of recognising the spot at which the capsule is ruptured, Roser (in his revision of the theory of luxations) and Weber (in his '*Chirurgische Erfahrungen*') have treated this matter with great thoroughness, and have applied the results, at which they arrived, to practice. Quite recently a complete essay on the most difficult dislocations to reduce, those of the hip, has been published by Gellé in Paris; he, however, after the usual custom, has entirely neglected the researches of German investigators. Prof. Busch has himself made a considerable number of experiments on the subject, and has in general arrived at the same result as Roser, at the old principle of Galen and J. L. Petit, that the reduction of a dislocation is most easy when the dislocated bone follows the same course, but in the opposite direction, to the one along which it originally passed, and that the most favorable position of the limb for reduction is that in which the displacement occurred: in respect to the treatment of dislocation of the femur, he found some modifications of Roser's principles advisable.

"On the morning of the 12th February, 1861, a young man applied

at the Clinic, who, during an epileptic attack in the course of the previous night, had had a recurrence of a dislocation of the shoulder. It had been dislocated for the first time a year previously in Australia, by a fall, and he had since had a couple of recurrences (he varied in his account of the number). The position of the arm was the usual characteristic one; the displaced head was close to the coracoid process, which, as he was thin, could be readily felt. As reduction was expected to be very easy, owing to the frequent recurrences, it was attempted by the method of Mothe-Rust, and without the use of chloroform. The failure of the traction thus exercised was referred to the awkward movements of the patient; he was accordingly fully narcotised, and the attempt repeated. Another failure was the result, although the process was carried out by well-skilled assistants; indeed it was now found that even great force was insufficient to firmly fix the scapula, and that the arm could be scarcely at all raised without changing the position of that bone. Thus it appeared clear that the humerus was held with uncommon firmness by the slit in the capsule, and probable that the greater tension of the latter was owing to the head of the humerus having passed to a greater distance from the glenoid cavity than on former occasions. After repeated but vain attempts, a trial was made with Astley Cooper's method, and as this also was unsuccessful, the patient being still under the influence of chloroform, the arm was extended horizontally by the apparatus of Schneider-Mennel. Yet the head did not move in the least from its place, although the force was increased by means of the apparatus to such a degree that I believed I could not go further without danger of rupturing the muscles or vessels.

"It was now evident that this enormous difficulty was owing to some peculiarity, for on previous occasions the same luxation had been reduced without any extraordinary trouble. At all events nothing was to be gained from force, and from the ordinary methods. We evidently had to try some other plan, or send the patient home with the dislocation unreduced. Fortunately we were able, in this case, to approximately determine the position of the rupture in the capsule. His friends had frequently and distinctly observed that in his epileptic attacks the arms moved in such a way as to drive the elbows violently backwards. Now, since the head of the humerus had slipped out of the capsule in such a movement, it was probable that the aperture was placed more on the anterior than under side of the capsule. Moreover, the outer lip of this slit must now be so closely stretched over the neck of the dislocated humerus, that traction could not release the head from its position. It became clear to me that reposition would become more easy if the slit in the capsule could be made to gape, so that the head could glide through it.

"To effect this, I let the now conscious patient get on the operating table, and place himself in a horizontal position; I now placed my right forearm under the back of his arm, just below his shoulder, as a fulcrum, and let an assistant press the patient's arm powerfully backwards. If my calculation as to the position of the rupture in the capsule, and the manner in which it caused the difficulty, were correct, the outer lip of

the tear would be raised upwards by the dislocated bone itself, owing to this backward motion of the arm over the fulcrum, the slit would gape, and as large a space as possible would be left between its outer lip and the margin of the glenoid cavity or the inner lip. On this proceeding being put into force, the head immediately left its previous position, and on slight rotation of the arm inwards, slipped into the articular cavity. Thus what had not been possible by the use of great force, and when the patient was perfectly narcotised, now succeeded with the greatest ease, and when the patient was perfectly conscious. It has often been noticed before that it has been quite child's play, on the use of a proper method, to reduce dislocations which had previously resisted the use of great force. It is very extraordinary, and, so far as I know, has not been previously observed, that after several recurrences of luxation of the humerus the slit in the capsule should hold the dislocated bone so tightly that any traction, according to the ordinary methods, only appeared to fix it more firmly. As already mentioned, there must have been something peculiar, for in the course of last year this patient twice dislocated the humerus, once in swimming, and once in an epileptic attack, and both times reduction was very easy, once by the lever-movement just described, and the other time by extension and counter-extension."

Since in this case one lip of the tear in the capsule was raised from the other with the view of dilating the aperture as much as possible, the author endeavoured to test the same principle in other luxations. Unfortunately the production of shoulder and elbow dislocations on the subject is ordinarily attended with such extensive tears in the capsule, as to render reduction extremely easy. In only a few cases was the luxation firm enough for the purpose. In respect to dislocations of the shoulder, experience has already anticipated theory; in the method of Mothe-Rust, so often employed, the head of the bone raises the lip of the rupture from the glenoid cavity, owing to the elevation of the arm, when the rupture has taken place at the lower part of the capsule. Dislocation under the coracoid process was always readily reduced on the subject, by raising the arm as directly upwards as possible; when the capsule was ruptured in front, reduction was facilitated by carrying the arm backwards, and at the same time raising it. On the subject it mattered little whether slight traction in such a position, with subsequent depression of the arm, or the lever movement already described, followed by rotation, was employed. The author was able, in two cases, to confirm Roser's statement that hyper-extension, by which dislocation of the elbow backwards is most easily produced, was also the position in which reduction was most readily effected. The value of a method of reduction may be best tested in cases of dislocation of the femur. The dislocation is most easily produced on the subject by fixing the pelvis firmly, flexing the thigh at the hip and knee, and with a sudden effort adducting, and at the same time rotating the extremity inwards. Thus the neck of the femur presses on the margin of the acetabulum as a fulcrum, whilst the head is raised and violently forced out, so as to rupture the postero-inferior part of the capsule. The head always passed out below the tendon of the obturator internus.

owing to the great flexion necessary to rupture the capsule. It depends on the size of the tear, and on the force exerted in carrying the limb down after the production of the dislocation, whether the head remains close to the point of rupture, or whether it is driven to a greater or less distance, even on to the ilium; sometimes an ischiatic, sometimes an iliac dislocation is the result. Gellé has asserted that a luxation of the femur may be most easily produced on the subject by flexion without adduction, but the author has never been able to succeed in such a way. The capsule does not always tear in the same direction; the rupture is sometimes just at, or close to, the edge of the acetabulum; at other times there is a short tear close to the acetabulum, from which a second passes outwards, parallel to the neck of the femur. The author has never seen such a rupture as that described by Gellé, in which the capsule remains entire near the pelvis, and is only torn at its attachment to the neck of the femur. Experience has already shown that in respect to luxations backwards, it matters not whether the head is placed higher or lower on the pelvis, the method of reduction by traction in the direction of the longitudinal axis of the body must be rejected. Such a method would only answer where the capsule was extensively torn. Where, however, as is usually the case, the rupture is only to a moderate extent, its outer lip is applied firmly to the neck of the femur, and the front of the capsule, which is at the same time uninjured, is very tense. On the subject it can be easily proved that extension causes increased tension of the capsule, but does not approximate the head of the bone to the acetabulum. On the other hand, if the thigh is flexed to a right angle or more, the head passes down to the rupture, and may, in a favorable case, then only require slight rotation outwards to effect reduction; in other cases it must be also slightly raised, which may generally be readily effected by a little extension, in a direction at right angles to the longitudinal axis of the body. Reduction is, however, much facilitated by adduction, which forces the rupture to gape, the head or neck of the bone raising the lower lip of the tear from the edge of the acetabulum. Thus in one experiment, after the thigh had been flexed, a small subcutaneous wound of the capsule was made with a tenotomy knife, and the head forced out by violent adduction, and then driven as much as possible upwards. The author now proceeded to reduction; he bent the thigh on the body to somewhat more than a right angle, then adducted, finally rotated the limb outwards, and stretched it; the luxation was reduced without the least traction. Having again dislocated the same limb, he bent the thigh not quite to a right angle, and then rotated it outwards; the head did not slip in, and still remained at some distance from the cotyloid ridge. The pelvis was now fixed, and extension applied to the thigh, flexed at a right angle; it required very considerable traction, indeed so great as to raise the pelvis, notwithstanding the efforts of the assistant, before the head could be replaced by rotation outwards. Thus flexion with adduction is the readiest method; simple flexion required the use of considerable traction. Adduction raises the head from the edge of the acetabulum, so that a little rotation outwards causes at once reduction. Flexion with adduction was empirically used, and recommended by Després;

the adduction should, however, be carried to a greater degree than recommended by him; the thigh should generally be flexed to rather more than a right angle.

The capsule is always ruptured on the inner side of the ilio-femoral ligament, in cases of dislocation forwards on to the pubis, or into the foramen ovale; both these luxations are caused essentially in the same manner, and the different position of the head depends on the degree of adduction of the thigh, and the point of rupture of the capsule. Both are produced on the subject by hyperextension, abduction, and rotation outwards. In some rare cases the dislocation into the foramen ovale is secondary to the ischiatic form produced by flexion and adduction, abduction immediately ensuing, and driving the head forwards round the lower margin of the acetabulum. In the luxation on to the pubis the head either remains close to the spot at which the capsule is ruptured, a little to the inner side of the anterior inferior spinous process, and therefore, strictly speaking, not on the pubis, as correctly remarked by Malgaigne, or it passes further inwards, even behind the psoas-iliacus, the nerves, and vessels. Experience has already condemned direct extension in the latter cases, where the limb is extended or slightly flexed and rotated outwards; such traction, indeed, renders both the psoas and the capsule more tense. Reduction by flexion, even to an acute angle, has been recently recommended, and it is true that by this means the outer lip of the capsular tear, which is formed by the ilio-femoral ligament, is relaxed; where the head is close to the anterior inferior spinous process, flexion, aided perhaps by a little abduction, forces it to the edge of the acetabulum; but where it is placed really on the pubis, flexion presses it still further behind the os pubis; it is necessary in such a case to use sufficient extension in a direction at right angles to the longitudinal axis of the body, to raise the head over the pubis. It may be laid down as a general principle that in both varieties of suprapubic luxation the method of reduction by abduction, hyperextension, and rotation outwards, is to be preferred to that by angular flexion. It is not necessary to make any difference in the method of reduction employed in dislocations forwards; just as in those backwards, the higher or lower position of the head is of little importance, and accordingly the method just recommended for the luxation on to the os pubis answers for that into the foramen ovale, except that in the latter the abduction should be somewhat more forcible. Of course, in the rare cases where the latter form is secondary to an ischiatic dislocation, the first point will be to reproduce the latter form. According to the author's experiments, the easiest way of reducing dislocations of the femur may be formulated as follows:—1. Dislocation backwards, iliac or ischiatic; flex the thigh to rather more than a right angle, adduct it till the knee reaches somewhat over the opposite side of the body, and then rotate outwards. (2) Dislocation forwards, supra or infra-pubic; abduct the thigh, rotate it somewhat outwards, and carry it into hyperextension, then rapidly rotate inwards and place it straight.

An athletic farmer's-man had, six days before his admission into the Clinic, dislocated the left thigh backwards by a fall from a considerable height. The limb was moderately flexed and much rotated inwards, but

little shortened; the head appeared to be located on the edge of the os ilium. At three different times attempts at reduction had been already made, both with extension and flexion to an acute angle. When chloroform had been administered, the thigh was flexed to rather more than a right angle, adducted and rotated outwards; but although the head of the femur rose considerably during adduction, it would not slip in during rotation outwards, but returned to its abnormal position. An assistant now placed his forearm under the knee, the thigh was again flexed and strongly adducted, the assistant somewhat raised the limb, and then reduction was at once effected by rotation outwards.

The author also relates a case, in which repeated attempts had been made to reduce a dislocation of the shoulder without success. The patient was an old, but athletic countryman, the head was placed somewhat to the inner side of the coracoid process. The author first tried extension both in the horizontal position and with the arm carried vertically upwards; as these failed, he had the arm raised to a horizontal position by an assistant, he himself placed his left hand, as a fulcrum, on the back of the upper arm just below the shoulder, seized with his right hand the patient's forearm and carried it forcibly backwards; he then rotated rapidly inwards, and the dislocation was reduced without the least difficulty.

Having examined the influence of the capsule in regard to reduction, the author proceeded to trace its connection with the position of the luxated limb. In respect to luxations of the femur, it is already known that the muscles which have become tense owing to change in position, exercise no influence in determining the position of the thigh on the pelvis. In dislocation backwards, the author found the quadratus, gemelli, obturator, pyramidalis, either very tense, or ruptured, whilst in front only the tensor vaginae femoris and the rectus appeared to be stretched; he divided all these muscles without in the least changing the degree of flexion, adduction, or rotation; the position of the limb is determined by the capsule. The same is the case in respect to dislocation on to the pubis; section of the psoas-iliacus does not influence the position. It appeared probable that in the shoulder the muscles would, at all events, modify the position; but in the dislocation downwards, and forwards, although part of the deltoid, the supra- and infra-spinatus were tense, yet their division did not diminish the abduction of the arm. The author concludes his paper with the relation of a curious case of dislocation of the shoulder. A porter, carrying a heavy load on his left shoulder down some steps, stumbled and fell. Owing to violent pain in his arm, he at once hastened to the Clinic. He arrived there with the left upper arm raised upwards by the side of the head, on which the fore arm rested, whilst he held with his right hand the left one near the right ear. The arm could be readily lowered, and as it approached the chest, the symptoms of a luxation downwards became distinct; the head was in the axilla just at the lower border of the glenoid cavity. The patient almost immediately begged the bystanders to let his arm alone; he then with a violent effort slung it up to its former position. He was induced to lower it himself, but the pain was so violent that in about a minute he threw it up again. To allow such

free motion of the arm, the capsule must have been ruptured to a considerable extent. Chloroform was not administered; the patient was seated on the ground, the head inclined somewhat to the right side, so that the arm could also be brought somewhat towards the same side from its erect position, gentle traction with one hand followed and the reduction was effected.

In a supplementary note, he mentions two further cases of ischiatic luxation of the femur, in which the method by flexion, adduction and rotation outwards, was employed; both were reduced with the greatest ease in a few seconds.

M. Maisonneure, researches on the mechanism of dislocations of the jaw ('L'union Méd.,' 1863; and 'Schmidt's Jahrb.,' vol. 119, p. 71). This dislocation is not unfrequently produced by some accidental cause, such as gaping, its symptoms are striking, and its reduction somewhat difficult, yet its experimental study has been hitherto neglected, its pathological anatomy imperfectly known, and theories widely at variance with the truth have gained credit. The author has succeeded in effecting this lesion on the subject; after some practice he gained such skill as to enable him to produce it at least forty times, both in male and female, young and aged subjects. He imitated the three motions which are now considered to cause it. The lower jaw was first pressed forcibly down, causing the condyles to glide on the articular eminences; then followed that motion which drives the condyles over them, and which is effected by a spasmodic contraction of the external pterygoid muscles or by external force. The energetic contraction of the elevation of the inferior maxilla, which should then ensue, was imitated, so as to fix the dislocated parts in their abnormal position.

It is necessary on the subject to fix the head and to press the jaw repeatedly and violently downwards, until the muscles become yielding. Then it is kept down by means of the two thumbs, whilst the tips of the middle and index fingers are placed on the rami below the condyles, so as to press the jaw strongly forwards. One condyle usually passes at a time before the eminentia articularis. When both condyles have passed forwards, the chin must be pressed upwards for a time; the dislocation is then often as unyielding as during life, presenting considerable difficulty in reduction.

Pathological anatomy.—The condyles are in front of the transverse root of the zygoma; the coronoid processes are completely surrounded by the tendons of the temporal muscles; they are situated below, and scarcely ever touch, the zygomatic process; they do not in any way impede reduction, as supposed by Monro, Nélaton, and others. The capsular ligament is tense, but not ruptured; the external lateral ligament is tense and passes from behind forwards, instead of from before backwards; the internal, lateral, and stylo-maxillary ligaments show considerable tension, which is increased by elevation of the chin. The interarticular ligaments are attached to and follow the motions of the condyles. The temporal muscles are only stretched; the masseters and external pterygoids are moderately tense; the internal very much relaxed.

Reduction.—To trace out its difficulties, the author, in a series of

experiments, divided the coronoid processes at their base, the zygomatic processes, opened the front of the capsular ligaments, all without effect; on dividing, however, simply the stylo-maxillary and internal and lateral ligaments, with the posterior fibres of the external ligament, the least pressure sufficed to effect reduction. He then proceeded to examine the different methods of reduction; he found blows on the cheeks useless; pressure with the thumbs on the back-teeth, combined with elevation of the chin, only succeeded a few times; depression of the chin, at the same time that the thumbs pressed away the masseters from the interior of the mouth was rather more successful; depression of the chin and pressure on the coronoid processes from before backwards, with the thumbs in the mouth, effected reduction constantly and with ease. Such a method also appears most rational, for the pressure on the coronoid processes is transmitted directly to the condyles, and the ligaments, which form the principal impediment, are previously relaxed as much as possible by the depression of the chin.

Prof. Streubel, on the difficulties in the reduction of recent traumatic luxations ('Prag. Viertelj.,' 1862, iv, 59). B. Bruns (ib., 1863, ii, 1). Mr. Higginson, dislocation and fracture of the *spine*, displacement reduced by moderate extension under chloroform ('Brit. Med. Journ.,' 1862, ii, 499). H. Demme, dislocation of one half of the *pelvis* ('Schweiz. Zeitschr.,' i, 290). E. Ancelet, on dislocations of the *sternum* ('Gaz. d. Hôp.,' 1863, p. 257). M. Morel-Lavallée, sub-acromial dislocation of the *clavicle* (ib., 1863, pp. 102, 298). F. H. Hamilton, unreduced dislocation of acromial end of *clavicle*—use of arm perfect ('Amer. Med. Tim.,' 1863, ii, 193). J. Bell, on the nomenclature of *scapulo-humeral* luxations ('Edin. Med. Journ.,' viii, 1004). Dr. Garms, a new method of reducing dislocations of the shoulder ('Arch. d. Heilk.,' 1863, p. 181). M. Poulet, on the diagnosis of incomplete luxation inwards of the *elbow* ('Gaz. d. Hôp.,' 1863, p. 342.) Dr. Hahn ('Schmidt's Jahrb.,' vol. 119, p. 74). M. Chassaignac, dislocation of the *hand* backwards ('Gaz. d. Hôp.,' 1863, p. 462). M. Dolbeau, luxation of the *femur* into the foramen ovale ('Gaz. d. Hôp.,' 1863, pp. 425, 439). M. Fortin, on the diagnosis of dislocation of the femur in young children ('Gaz. Hebdom.,' 1863, p. 698). T. O. Ward, dislocation of the *knee* ('Brit. Med. Journ.,' 1863, i, 113). Dr. Gaulke, vertical dislocation of the *patella* ('Deutsche Klin.,' 1863, p. 108).

EXCISION.

Mr. B. Holt has found extension by straps of plaster and a weight to give most satisfactory results in cases of excision of the head of the femur. He adopted a similar plan in a case in which he had excised the elbow by a single longitudinal incision ('Lanc.,' 1863, i, 38). 'After the operation the limb was extended in the following manner:—A long strip of plaster was carried up on each side of the forearm, leaving a loop beyond the hand, and a piece of stick being inserted in the loop, so as to prevent the band from being compressed; a bag of sand of three pounds weight was attached to the stick, so as to keep the arm on the stretch and the cut ends of the bones apart. As the patient complained after a day or two of the drag on the shoulder, a

piece of plaster was attached to the upper part of the humerus, and fastened by a bandage to the head of the bed, so as to keep up counter-extension, and he was then perfectly easy. After the operation the condition of the arm was most satisfactory, the ends of the bones being well separated, and the amount of suppuration small. No pain whatever in the part was complained of by the patient. Unfortunately the case terminated fatally from tuberculosis; but so far as the treatment of the elbow went, everything was most satisfactory, the patient being perfectly easy, and the external incision healing rapidly."

Discussion on subperiosteal operations ('Gaz. d. Hôp.,' 1863, p. 195, &c.) H. Senftleben, on the indications, the process of healing, and the after-treatment ('Arch. f. Klin. Chir.,' iii, 79). A. Lücke, a collection of all the resections performed by B. Langenbeck at the Berlin Clinic (ib., p. 291). S. B. Radcliffe, on the use of drainage ('Amer. Med. Tim.,' 1863, ii, 60). J. Spence, on excision of the elbow by a longitudinal incision ('Edinb. Med. Journ.,' viii, 1033). D. P. Smith, excision of the head of the femur many months after a gunshot-wound; recovery ('Amer. Med. Tim.,' vii, 13). T. Demel, on excision of the hip ('Wien. Med. Halle,' 1862, p. 440). T. W. Crosse, excision of the knee in children ('Brit. Med. Journ.,' 1863, ii, 210). T. Smith, (clinical lecture on resection of the knee-joint in children ('Med. Tim. and Gaz.,' 1863, ii, 241). M. Verneuil, excision of the knee, in a case of gunshot injury ('Gaz. Hebdom.,' 1863, p. 665). W. M. Clarke, excision of the knee-joint—is it a justifiable operation? ('Brit. Med. Journ.,' 1863, ii, 337). H. Hancock, on excision of the ankle ('Lanc.,' 1863, i, 142). J. C. Johnson, case of resection of ankle-joint for compound dislocation ('Amer. Med. Tim.,' 1863, ii, 234). W. Canniff, case of resection of the ankle-joint ('Brit. Amer. Journ.,' iii, 170).

AMPUTATION.

D. P. Smith recommends a *method of amputating the leg*, which in its results is essentially the same as the process by a single outer flap long since recommended by Sédillot ('Méd. Opérat.,' 2nd edit., vol. i, p. 444). He says—"The multitude of amputations below the knee which I have performed, seen, and watched the result of, have convinced me that none of the ordinary methods are the best possible in any case, least of all in army surgery. I have yet to see the circular operation heal without great suppuration; and the posterior flap operation has, in five cases out of six, been complicated with the protrusion of the spine of the tibia. This with a heavy posterior flap can scarcely be prevented. The double flap is nearer the truth, but the (in my estimation) proper operation differs widely from that. It is briefly described thus:—Standing on either side, transfix the limb at the point you intend to saw the bones, with the flat of the knife against the posterior surface of both tibia and fibula; then cut downwards for about five inches, keeping the knife closely applied to the surface of the bones. Next bring the back of the knife to its first position, pressing back against the commencement of the incision. Then with a quick movement of the wrist cut a posterior flap of one or two inches

in length, and carrying the disengaged knife over the front of the limb, connect the extremities of the longitudinal incision by a curved incision with its convexity downwards. Dissecting up the anterior flap the operation is easily completed, and, remembering to saw off the upper and inner angle of the shin, your anterior flap falls over the stump as naturally as the eyelid over the eye, and the pus finds as ready an exit as do the tears."

"The advantages of this mode of amputation are many and various—(1) the facility of execution; (2) the complete freedom from all and any tension; (3) the ready exit of pus; (4) the impossibility of any dragging of the flap against the spirit of the tibia; (5) the freedom from pressure of all the important vessels and nerves."

"The only objection that can be urged against this method is this—that by making the anterior flap so long, more of the length of a limb may be sacrificed. This objection at once falls to the ground, when we reflect that the posterior flap may be increased in length, and the anterior shortened, whenever circumstances may seem to demand it. The peculiar advantages of this form of operation are well preserved if the anterior flap is not more than two inches longer than the posterior." (*Amer. Med. Tim.*, 1863, i. 88.)

J. Swinburne, in a paper on the *indications for amputation* in military surgery (*Amer. Med. Tim.*, 1863, i, 149) makes the following remarks: "The treatment of compound and comminuted fractures of the thigh becomes a matter of serious consideration, since it involves many important points. Statistics from the Crimean war show that in amputation through the hip-joint all died. In the upper third 87·0. In the middle third 60·0 died. In the lower third 56·6 died; while the present war will, I think, demonstrate that even a greater proportion than this prove fatal. Excision of the shaft is evidently out of the question, since all die after the operation. The question then arises, Shall we amputate?—or, Shall we treat such cases as ordinary compound fractures? I prefer the latter, and have from the first thought it the most reasonable treatment. The plan I propose is to place the patient on a bed or stretcher, extend the limb as near as possible to its normal length without giving too great pain. Retain it in that position by fastening the foot to the foot of the bed or stretcher, by means of adhesive plaster, as in ordinary compound fractures, as I have on other occasions illustrated (*Trans. State Med. Soc., N.Y.*, for 1861, &c.). Make the counter-extension thereon by an inclined plane, against which the body impinges, by elevating the foot of the bed or stretcher,—or the use of a perineal belt fastened to the head of the bed or stretcher. To obviate inversion or eversion of the foot, I place bags of sand on each side of the foot. There should be no bandaging of the leg or thigh. If collections of matter follow, free incisions may become necessary to relieve constrictions, and to facilitate the discharge of such matter and spicula of bone,—irrigation or the application of cloth wet in cold or warm water must be continued to the limb until inflammation has passed off. Under no circumstances must the patient be removed from the bed or stretcher until the consolidation of the bone is considerable, when artificial support can be given, and the

patient allowed to go about on crutches. In this way I contend that many more lives can be saved than by amputations, and of necessity with less mutilation. Hence, do not amputate for compound and comminuted fractures occurring in the shaft, neck, or head of the thigh-bone." The author adds a note, from which it appears that, out of twenty-one cases of compound and comminuted fracture of the thigh taken indiscriminately, and treated by W. van Steinburg, M.D., surgeon to the 55th N. Y. S. V., with simple extension in the manner just described, two died and nineteen recovered with tolerably useful limbs.

"In compound and comminuted fracture of the shaft of the tibia, or even tibia and fibula, from bullet wounds, amputation should not be practised, since hundreds who have accidentally escaped the surgeons have recovered with only slight deformity. I think as many will survive by simply treating these injuries as if they were ordinary compound fractures from any other cause, as would from amputation, and of course with much more useful limbs. I now know of at least a dozen cases which were destined for amputation that are now recovering, and most of them will be as perfect as before the injury. As soon as practicable after the injury the wounded man should be placed on a bed or stretcher, and kept there until consolidation of the bone takes place,—or until removed to some permanent place for treatment. Extension sufficient to keep the limb to near its normal length. Lateral support given by means of sand-bags placed longitudinally to prevent inversion or eversion of the foot, as well as for the proper support of the limb. Extension kept up with no bandaging, and the treatment proceeded with as previously detailed in analogous injuries of the thigh.—or, as if it were an ordinary compound fracture of the leg; but under no circumstances should excision be practised. All that can be required is to enlarge the incision, and remove loose spicula and other foreign bodies. I may here state the great and potent reason why so many compound fractures do badly, is the fact, that the injured limbs are either bound up tightly with bandage and splints, or carried from hospital to hospital without even the support of a stretcher; a proceeding which destroys even a limb with simple fracture, and much more one of compound and comminuted fracture."

The author concludes his paper in the following words:—"I cannot urge too strongly the importance of having an abundance of stretchers for the immediate relief of the wounded, and particularly those wounded in the lower extremities, to which can be attached an india-rubber cover, in case of heavy dews or rains. By this means the patient is treated more successfully some days after injury than if he were transferred to close and ill-ventilated hospitals, houses, or even tents, since you avoid the danger of foul and pus-generating air. These appliances keep them from the wet above as well as below (compare Jüngken's remarks on pyæmia, &c., 'Year-book' for 1862, p. 212). There should be at least a sufficient number of these stretchers to supply all cases of amputations of the lower extremities, as well as compound and comminuted fractures of the same, where any effort is being made to save the limb; without them our efforts are futile, since the bedstead or stretcher becomes the splint; so in all cases of wounds of the trunk."

According to J. T. Hodgen ('Amer. Med. Tim.,' 1863, ii, 169), amputation in cases of gunshot fractures of the femur or tibia has been pretty generally abandoned by American military surgeons, except when joints, blood-vessels, or nerves, are implicated. M. Legouest rejects primary amputation at the hip ('Mém. de la Soc. de Chir.,' v, 157); he has collected thirty cases, in which the operation was immediately performed—not one recovered; and Baron Larrey (ib., 369) lays it down as an almost absolute principle, that in cases of gunshot fracture of the superior third of the femur, preservation of the limb should be attempted, amputation, when necessary, being performed at a late period, as in a case of organic disease, and not immediately after the receipt of the injury.

Mr. Spence ('Edimb. Med. Journ.,' viii, 955) gives the following as the *requisites of a good stump*:—the bone must be well covered with soft parts, and must not be adherent to, or bear directly upon, the cicatrix; the nerves must have been so cut as not to become involved in the cicatrix, or attached to the end of the bone, and so deeply covered as to obviate the bad effects produced on their cut extremities by pressure or atmospheric changes. Such a stump would bear a considerable amount of direct pressure without becoming painful, irritable, or liable to ulceration. Mr. Spence has found, by examination and dissection of stumps, that whilst the muscular substance retained in flap operations certainly diminished in bulk, it did not in many cases do so to such an extent as might have been expected from *à priori* reasoning, but that, in almost every case, the muscular fibre, though frequently altered and condensed into a fibroid substance, could be traced as a thick layer under the skin; as to neuromata, they are equally present in all forms of stumps, and even when the nerves are deeply covered; in fact, a greater or less enlargement of the end of the nerve is a necessary result of its division. When such swellings are subjected to irritation from pressure, or from atmospheric influences, by being too near the surface of the stump, or from being involved in the cicatrix, they appear to increase in size, and occasion excessively painful symptoms; however, whether the stump had been painful or not, neuromata were found invariably present. Examination of stumps formed by the circular method had satisfied Mr. Spence of its inferiority to the flap; for almost all the circular stumps were extremely conical and tender, the bone adhering to the cicatrix, which was not unfrequently ulcerated. At the same time many of the stumps formed by flap amputations were very defective, especially those where the operation had been performed by lateral flaps in the lower third of the thigh. In these the bone projected towards, and generally adhered to, the cicatrix at the anterior point of transfixion, whilst the soft parts, forming the flaps, hung back from it. In various cases the soft parts were so retracted as to cause the stumps to resemble those obtained by the circular method; whilst in others the flaps seemed to have turned in upon themselves, leaving a deep cleft corresponding to the cicatrix, which was closely attached to the bone. Still, on the whole, the stumps obtained by the flap were decidedly better than those which resulted from the circular method and their defects did not appear due to causes inherent in the mode of operating.

"After performing several amputations of the thigh by Mr. Teale's method, and obtaining excellent stumps, it seemed to Mr. Spence that its chief advantage consisted in the end of the bone being completely covered by the sound tissue of the anterior flap, whilst the cicatrix was placed high up on the posterior part of the stump; but that the square form and the folding of the long flap were disadvantages as leading to trouble in adjusting the flap, and in the after-dressing, should union by the first intention fail, whilst the folding the flap on itself, and so retaining it by stitches, was likely to endanger its vitality to some extent. It seemed, therefore, to Mr. Spence that he might obtain the advantages without the disadvantages of Mr. Teale's method, by reverting to a modification of O'Malloran's operation, and simply cutting a large, slightly-rounded flap from the anterior aspect of the thigh, dividing the soft parts posteriorly by a circular sweep of the knife, so that, when the bone was sawn through, the anterior flap would fall upon and adjust itself to the section of the limb. This plan had accordingly been put in practice, and found to answer so fully, as regarded the form of stump and the simplicity of the dressing and after treatment, that Mr. Spence now constantly adopted it as a general method in amputation of the lower part of the thigh. For the proper performance of this operation some particulars required to be attended to as regarded the size, form, and textures to be preserved in the anterior flap, and the section of the bone. In order that the anterior flap might fall loosely over, and cover the posterior segment of the stump, its breadth, in its whole extent, must be fully equal to one half the circumference of the limb, and it must be gently rounded at its extremity, so as to adjust itself readily to the curve of the cut margins of the posterior half of the stump. In Mr. Spence's own operations, he judged of the proportions by the eye; but a flap of four inches would be found sufficient in a limb twelve inches in circumference, provided due attention were paid to preparing the bone for section, by elevating the thigh somewhat towards the pelvis, retracting the soft parts, and clearing the bone fully two inches higher up than the base of the flap. The bone was thus projected to the utmost, and if sawn close to the soft parts, when the limb was lowered, it was deeply buried in the anterior flap, which hung loosely over it. As to the textures composing the flap, Mr. Spence generally operated as low down as possible, so that the lower part of the flap was chiefly composed of skin; but he cut obliquely through the anterior muscles to the bone, so as to have a thicker cushion directly corresponding to the sawn end of the bone. The great vessels must be left in the posterior part of the stump, and not included in the flap."

H. Schmidt, statistics of all amputations and excisions performed at the Surgical Clinic of Tübingen, from 1843 to 1863 (Stuttg., Ebner and Seubert). M. Legouest, statistics of amputations ('Gaz. Hebdom.' 1863, p. 222). M. Debout, on the use of coverings for stumps ('Gaz. d. Hôp.', 1863, p. 374). W. Busch, artificial leg for cases in which amputation of the thigh has been performed ('Arch. f. Klin. Chir.' iv, 32). J. F. Heyfelder, case of amputation at the shoulder-joint ('Deutsche Klinik,' 1862, p. 473). J. Spence, case of amputation at the

hip-joint ('Edinb. Med. Journ.,' viii, 585). Sawostitzki, osteoplastic amputation of the thigh ('St. Petersb. Med. Zeitschr.,' iii, 372).

SPECIAL SURGERY.

HEAD.

M. Nélaton, clinical lecture on a case of cancer of the upper jaw, following suppuration in the antrum ('Allg. Wien. Med. Zeit.,' 1863, p. 2). He pointed out that the tumour had caused absorption of the bone, and that an ordinary needle could be introduced without meeting with any resistance, an almost decisive sign of cancer.

Dr. H. Senfleben has given the following description of *acute rheumatic periostitis of the lower jaw* ('Arch. f. Path. Anat.,' xviii, 347). It attacks perfectly healthy and robust individuals, with good teeth, after severe colds. It commences with violent toothache along one side of the jaw, considerable and often very intense fever, swelling of the cheek and gums, difficulty in chewing and swallowing, increased secretion of the mucous membrane of the mouth and salivary glands, congestion of the head, even delirium. The symptoms usually increase in severity until suppuration takes place, unless active local blood-letting is early employed. Scarification of the gums down to the bone is the most simple and effectual manner of depletion; its effect is often magical. Warm poultices and saline purgatives should also be employed. The action of preparations of iodine or mercury is too slow and uncertain. Suppuration sometimes occurs in even two or three days, one or more teeth fall out, and the pus is discharged by the alveoli; the matter also makes its way into the mouth by an aperture forming at the level of the roots of the teeth, and still more rarely through the cheek and external skin. Before the latter occurs, fluctuating swellings, with great but circumscribed redness of the skin, appear; should these not be opened early, a necrosis, of the whole thickness of the bone, is sure to result. The suppuration, which was originally limited to a few spots covered by the gum and to the alveoli, extends along the lower border, and covers the whole circumference of the jaw. If the abscess is early opened, the exfoliation of the bone is limited to one or other cortical layer, and usually to the outer one. Fistulae passing towards the mouth heal with difficulty, for the morbid process has then a great tendency to recur, owing to the constant movement of the jaw, and the irritation of the diseased tissues by the secretions and ingesta. Occasionally fresh suppurations, accompanied by febrile symptoms, recur, the submaxillary lymphatic glands become swollen and indurated, the soft parts of the cheek acquire slowly a hardness like that of a white swelling, constantly present a higher temperature, and are extremely sensitive to the touch. The diseased periosteum produces both pus and osteophytes. The latter vary much, sometimes appearing as compact bridges of bone, which even undergo sclerosis, or as porous deposits like pumice-stone. Wherever a sequestrum is not thrown off soon after the first attack of acute inflammation, it may be admitted that an extensive necrosis is in progress, when osteophytes can be felt with the probe. In such cases sponta-

neous separation of the sequestrum rarely ensues; it remains to some extent in organic connection with the osteophytes, and ultimately, after a number of months, a year, or even more, an operation has to be performed, in which both the sequestrum and the osteophytes are removed together; in some cases, however, the sequestrum can be dragged out of the newly-formed shell without difficulty. A surgeon does not usually determine on an operation for the extraction of a large sequestrum, affecting the whole thickness of the bone, until osteophytes have formed, sufficient to form a bridge between the healthy portions of the bone, and to preserve the continuity of the maxillary arch; for otherwise deformity is invariably produced by the lateral displacement of the chin. On the other hand, it should be remembered that the necrosis may spread further, attack the osteophytes, and ultimately require the removal of all the side of the jaw. The patients suffer much in their general health; the unavoidable mixture of pus and fetid products with the saliva and food excite pharyngeal catarrh, and interfere with digestion. The latter effects would be of still greater importance in children; fortunately the course of the disease appears to be different in them—the sequestrum soon becomes loose, and is thrown off before the process has become chronic and produced osteophytes, thus pieces, including the whole thickness of the bone, may come away in a very short time. Necrosis of the whole jaw from rheumatic periostitis is certainly very rare; to remove such a sequestrum—and sooner or later it becomes necessary—is equivalent to extirpation of the whole bone. The author describes such a case, in which Professor Langenbeck removed the whole lower jaw.

F. Jordan, on ligature of the carotid in progressing extravasation of blood within the cranium ('*Med. Tim. and Gaz.*,' 1863, i, 612). Discussion on a tumour of the head ('*Gaz. d. Hôp.*,' 1862, pp. 543, 555). T. Billroth, case of meningocele spuria cum fistula ventriculi cerebri ('*Arch. f. Klin. Chir.*, iii, 398). E. Gintrac, on hydromeningocele (*ib.*, Gurlt's report, p. 208).

Jaws.—Von Pitha, on exarticulation of the inferior maxilla ('*Wien. Med. Wochenschr.*,' 1862, pp. 673, 689, 705). M. Rizzoli, on intra-buccal removal of inferior maxilla ('*Gaz. Hebdom.*,' 1863, p. 293). Prof. Linhart, extraction of the roots of two teeth from the antrum ('*Wien. Med. Halle*,' 1863, p. 215). G. Simon, osteoplastic resections ('*Deutsche Klinik*,' 1863, p. 81).

EYE.

R. Liebreich, atlas of ophthalmoscopy (Berl., Hirschwald). T. Sämisch, contributions to the normal and pathological anatomy of the eye (pp. 36, Leipz., Engelmann). H. Snellen, test-types for the determination of the acuteness of vision (Lond., Williams and Norgate). F. Giraud-Teulon, lessons on strabismus and diplopia (Paris, J. B. Baillière). H. W. Williams, practical guide to the study of the diseases of the eye (Boston, U.S.). M. Follin, lessons on the examination of the eye, &c. (Paris, A. Delahaye). *Compte-rendu* of the ophthalmic congress, 2nd session, 1862 (Paris, J. B. Baillière). R. Grilli, on the

ophthalmoscope and the internal diseases of the eye (reviewed in the 'Ann. d'Ocul.' vol. xlviii, p. 290). J. Z. Laurence, the progress of ophthalmic surgery (Lond., 1863). E. Canton, on the arcus senilis (pp. 228, Lond., 1863). A. W. Volkmann, physiological researches in optics, 1st fasciculus (Leipz., Breitkopf and Härtel). A new journal, edited by Dr. W. Zehender, has been commenced, under the title of 'Klinische Monatsblätter für Augenheilkunde' (Erlangen, F. Enke).

In Snellen's work the ascending and descending portions of each letter are uniform in thickness, and exactly five times longer than broad. A number is placed over each set of letters, which gives the number of Paris feet at which a normal eye sees the height of each letter under an angle of five minutes, and therefore the breadth of each stroke under one of one minute. The author assumes that an eye of normal acuteness sees lines distinctly under an angle of one minute, or, inversely, that an eye which sees lines distinctly under a visual angle of one minute possesses the normal acuteness of vision. This assumption is founded on the researches of Hooke, according to which an angle of one minute is necessary for the accurate distinction of lines. By means of this supposition the author gains a comparable numerical expression for the degree of visual power in the following manner. The visual acuteness of an eye (S) is equal to the proportion of the distance at which the eye clearly distinguishes the letters (d) to the distance at which the eye sees them under an angle of five minutes (D), *i. e.*

$S = \frac{d}{D}$. If, for example, an eye sees the letters marked I, V, XX, at

a distance of 1, 5, 20 Paris feet respectively, then $S = \frac{1}{1} = \frac{5}{5} = \frac{20}{20} = 1$,

or, in other words, the acuteness is equal to the normal. Should, on the other hand, another eye recognise No. XX at no greater distance

than fifteen feet, S would equal $\frac{15}{20} = \frac{3}{4}$, the acuteness being less than

the normal, a condition coming under the head of amblyopia. There are also eyes which are able to see distinctly at a greater distance than the number assigned; such eyes possess an unusually great acuteness of

vision, of which the proportion is again expressed by $\frac{d}{D}$. It should be

mentioned that all abnormal states of refraction must be eliminated by the use of proper glasses before the acuteness of vision can be determined. The author has added to his work specimens of white and coloured letters on a black ground, of black strokes on a white ground, and a series of words in which the letters correspond as much as possible to the desired size. Dr. Snellen adds (2nd edition, Berlin, 1863, p. 6), that in noting cases he usually inserts the fractions as they are, without reduction. By this means it may be known at a later period

what numbers of the type have been employed. Thus, $S = \frac{10}{20}$ would signify that No. XX was recognised at the distance of ten feet.

Where the vision is so bad that the letters are too small, he has

recourse to the counting of fingers. Fingers well separated from one another and held before a black background equal with tolerable accuracy No. CC in distinctness; and thus, if fingers can be so counted at the distance of ten feet, it may be noted as $S = \frac{10}{200}$.

The motion of a hand over a surface five times larger than No. CC can be recognised at about five times greater distance = 1000 feet.

If, then, the motion of a hand is seen at three feet, $S = \frac{3}{1000}$.

If only quantitative perception remains, the visual angle required for vision being infinite in size, $S = \frac{1}{\infty}$. If no perception of light remains, $S = 0$.

In order that no error may arise from defective accommodation, the author generally commences with the examination of large type at a considerable distance; if, then, the vision is not improved by either positive or negative glasses, both myopia and hypermetropia are excluded. The eye must still, however, be examined for astigmatism, either by the use of a small slit or, still better, of both positive and negative cylindrical glasses; in practice, we soon learn to recognise this affection from the peculiar errors made in naming the letters and from the elongation of the image.

Dr. J. Vroesom de Haan, researches on the influence of age on the acuteness of vision (in the reports of the Dutch Hospital for Eye Diseases, 1862, Utrecht). He excluded all eyes affected with myopia greater than $\frac{1}{50}$, with manifest hypermetropia greater than $\frac{1}{60}$, or with astigmatism greater than $\frac{1}{40}$. Such eyes as were not perfectly emmetropic were only examined, when they had been provided with neutralizing glasses. Care was also taken to avoid other errors, such as might proceed from different degrees of illumination or from the direction of the incident light. The only test-objects employed were the letters U, A, C, L, in No. XX, white on a black ground, which can be easily recognised. The number of persons examined amounted to 280; the age varied from seven to eighty-four years. Of twelve children, seven years old, one showed an acuteness of vision of $\frac{30}{20}$, the

second of $\frac{33}{20}$, the third of $\frac{35}{20}$, the fourth of $\frac{33}{20}$, the fifth and sixth of $\frac{36}{20}$, the seventh of $\frac{26}{20}$ with $+\frac{1}{80}$, the eighth and ninth of $\frac{32}{20}$, the tenth of $\frac{34\frac{1}{2}}{20}$, the eleventh of $\frac{35}{20}$, the twelfth, with $+\frac{1}{10}$, also $\frac{35}{20}$.

The average visual acuteness, according to the observations of the author, is from the seventh to the twenty-seventh year = $\frac{30}{20}$. From the twenty-eighth to the thirty-second year it sinks from $\frac{30}{20}$ to $\frac{29\frac{1}{2}}{20}$;

from the thirty-third to the thirty-seventh year to $\frac{28\frac{1}{2}}{20}$; then to the forty-second year down to $\frac{27}{20}$; with the forty-eighth year it falls to $\frac{25\frac{1}{2}}{20}$; with the fifty-third to $\frac{23}{20}$, and in the following five years to $\frac{21\frac{1}{2}}{20}$. From that time to the sixty-second year there is a diminution to $\frac{19\frac{1}{2}}{20}$; then to the seventy-second year to $\frac{17}{20}$; and finally, it continues to fall to

$\frac{14}{20}$ in the eighty-second year. The author is far from considering the number of his observations sufficient for perfectly certain deductions; they appear to him, however, to show—

(1) The average acuteness of vision remains much the same during the first twenty-five years of life.

(2) After the twenty-fifth year it diminishes in a tolerably regular manner.

(3) In old age it sinks to even less than half the original.

(4) It varies considerably in different persons of the same age.

A very interesting fact elucidated by the author's researches is that normal eyes possess a much greater acuteness of vision than that adopted by Snellen as the unit. The author found up to the twenty-fifth or thirtieth year $S = \frac{30}{26}$; from that period it diminished with such

slowness that it was not till the age of fifty that it became $= \frac{20}{20} = 1$.

Binocular ophthalmoscopy.—J. Z. Laurence ('Brit. Med. Journ.,' 1862, ii, 457) has simplified the instrument of Giraud-Teulon, by substituting for the rhombs ordinary reflectors of silvered glass or speculum metal. By a proper inclination of the reflectors, the double images can be made to coalesce (as in Wheatstone's reflecting stereoscope) without any additional prisms. Such an instrument can be adjusted to suit either the different separation of the eyes met with in different individuals or any deviations of accommodation.

R. B. Carter ('Lanc.,' 1863, i, 264) is anxious to call the attention of the profession, and especially of students and beginners, to the advantages of Mr. Laurence's instrument over those in common use. "In using the monocular ophthalmoscope of Coccius or Liebreich for the indirect or inverted image, in spite of abundant illumination and perfect definition, the objects seen have the appearance of being all in one plane. The vessels of the retina can be distinguished from those of the choroid by colour and direction, but not by any appreciable difference in their position. The depressions formed by choroidal atrophy or posterior staphyloma, and the elevations from subretinal hæmorrhage or effusion, present colours which contrast strongly with those of the general field, but scarcely any appearances by which, prior

to reflection, their sunken or raised position can be positively determined. Even the cupped optic disc, the most marked of the surface-changes of the fundus oculi, betrays itself chiefly by the bending of the vessels at its margin, and by inexperienced observers is not seldom mistaken for an elevation. Indeed, the limited power of one eye to furnish data for correctly estimating relief and relative position is, perhaps, the chief source of difficulty in the interpretation of ophthalmoscopic appearances. We are indebted to M. Giraud-Teulon for the suggestion by which this difficulty may be overcome. His binocular ophthalmoscope has now been nearly twelve months in use in this country, and it may fairly be said to enable the student to discern at once the nature of appearances that, with the monocular instruments, are obscure to any but the most experienced observers. With its assistance, not only is the depressed optic nerve immediately recognised as an unmistakable cup or cavity, but even small effusions of blood, or lymph, or serum, on the one hand, and patches of atrophy on the other, present aspects that are conclusive with regard to their relations to the general level of the field. The vessels of the retina, too, appear to stand out from, and to be distinctly on a plane anterior to, those of the choroid, which, again, in young light eyes, with good illumination, may be recognised at different depths in the chorio-capillaris. It would, perhaps, be too much to say that such assistance is of great value to those who have had large experience in the use of monocular instruments; but for those who desire to learn the use of the ophthalmoscope quickly, or to avoid errors of interpretation in spite of having had small experience, the instrument of Dr. Teulon can hardly be too highly estimated. It has, however, two serious faults. In the first place, the observer is annoyed by multiplied reflections of the mirror; and in the second, any one instrument can only be used by persons whose eyes are placed at the same distance apart. A slight difference in width sufficient to prevent perfect combination of the two portions of the light-pencil produces double vision and complete confusion. A somewhat greater difference, by excluding one eye from the visual act, reduces the instrument to a monocular ophthalmoscope of small utility, one half the light being lost to the observer." After describing the modifications suggested by Mr. Laurence, and carried out by Messrs. Murray and Heath, of 43, Piccadilly, he states that "Messrs. Murray and Heath's instrument, on account of its adjusting properties, not only admits of being passed from hand to hand, and modified, by turning a screw, to suit any observer, but it has the much greater advantage of affording complete rest to the muscular and accommodation apparatus. By altering the inclination of the mirrors, the precise direction may be given to the pencils of light, that enables the eye to receive them without effort and to study the images they form without fatigue. On this account, and also because it is free from the reflections of the mirror that are so annoying in Dr. Teulon's instrument, it is the easiest of all ophthalmoscopes to use, and is calculated to promote the general cultivation of ophthalmoscopic inquiry. There is a superficial appearance of complexity about the screws, the use of which should be mastered by preliminary practice with a candle-flame as an object; and the instrument is only perfectly adjusted when

the observer looks through it, almost without being conscious of its presence. If a little pains be taken in the first instance, the beginner will find no difficulty, except a liability to set the mirrors much too near or too far apart, in either case totally excluding one eye from participation in the visual act, and using, in fact, a monocular ophthalmoscope, with perfect definition, but no relief. After once seeing the relief that may be obtained, the way in which the retinal vessels appear to stand out from the nerve entrance, this mistake would be impossible. The degree of relief afforded by Messrs. Murray and Heath's instrument is superior to anything that I have been able to obtain with Dr. Giraud-Teulon's, a circumstance to be explained possibly by the rarity of a perfect fit with the latter. One patient, in whom I carefully compared the powers of the two instruments, and the state of whose eye was well adapted for testing them, suffered from a condition the nature and cause of which ought to be recorded. She had considerable detachment of the anterior portion of the retina on the nasal side of the right eye, as a consequence of that operation which the surgeons who perform it term 'division of the ciliary muscle.' A puncture had been made into the eye, ostensibly for the relief of myopia, and the resulting subretinal hæmorrhage or effusion had been sufficient to produce a lesion seriously and permanently injurious to vision."

Dr. Knapp (*'Klin. Monatsbl. f. Augenh.,'* 1863, p. 319) has employed the binocular ophthalmoscope of Giraud-Teulon. He states that he has found great advantages in its use in pathological conditions of the eye. The distance of opacities in the vitreous from the retina can be immediately recognised. The diagnosis of even the least degree of retinal separation is easy. In cases of œdema or of inflammatory changes in the optic nerve, the binocular ophthalmoscope causes instant recognition of the elevation, both as to its nature and degree. The same is the case in respect to excavation from atrophy of the optic nerve, or from glaucoma. Swellings of the retina to twice or thrice its natural thickness could be observed, and, on the other hand, atrophy of the retina was equally characterised. Both white points and streaks, and the more extensive plastic exudations, or collections of pigment in the retina, can be distinguished with greater ease from similar atrophic spots or masses of pigment in the choroid; the differential diagnosis of ecchymoses of the retina and choroid is also much facilitated. The author was able to recognise distinctly, in a case of retinitis from Bright's disease, that the collections of fat were placed in the central layers of the retina; from this and some similar cases he arrived at the conclusion that fatty degeneration of the retina, in Bright's disease, commences in the granular layers, and that it does not attack the layers of gray cerebral substance and of nervous fibres till a later period. He points out, in respect to diseases of the choroid, that binocular ophthalmoscopy is of great service in the diagnosis of choroidal exudations, and that atrophic and prominent portions of the choroid, which extremely resemble one another when seen by the ordinary instrument, can be very distinctly recognised and distinguished from one another. According to him, the steep margins of atrophic portions of the choroidal tissue, chiselled, as it were, in the choroid, which occur in cases

of choroiditis disseminata, and in sclerotico-choroiditis posterior, appear in a most striking manner. It is more especially in regard to the latter disease that the author praises the binocular speculum, and maintains that certain differences of level and other peculiarities can scarcely be recognised except by its use.

J. Hutchinson, affections of the eye following attacks of neuralgia or injuries to branches of the fifth nerve ('Ophth. Hosp. Rep.,' iv, 120). J. F. Streatfield, new forceps for fixing the eye (ib., p. 100). Dr. Debout, on the mechanical restoration of the apparatus of vision ('Dubl. Quart. Journ.,' xxxvi, 67). Dr. Klebs, on the pathological anatomy of the eye ('Arch. f. path. Anat.,' xxv, 355), and Dr. Schiess-Gemuseus (ib., xxvii, 127). L. Kugel, on oblique vision in cases of astigmatism ('Wien. Med. Wochenschr.,' 1863, p. 420, &c.). J. H. Knapp, Dr. Schweigger, and Prof. Donders, on astigmatism ('Arch. f. Ophth.,' vol. viii, part 2, p. 185; ib., vol. ix, part 1, p. 178; 'Gaz. Hebdom.,' 1863, p. 637). H. Schiess, statistics of diseases of the eye ('Schweiz. Zeitschr.,' ii, 248); and on panophthalmitis ('Arch. f. Ophth.,' vol. ix, part i, p. 22). M. Giraud-Teulon and F. Heymann, on auto-ophthalmoscopy ('Ann. d'Ocul.,' vol. 49, p. 181; and vol. 50, p. 34).

Eyelids.—W. Detmold, division of the levator for lagophthalmus ('Amer. Med. Tim.,' 1863, i, 62). W. Roser, on trachoma ('Arch. d. Heilk.,' 1863, p. 377). Prof. Arlt, congenital coloboma of the upper eyelid ('Spit. Zeit.,' 1863, p. 187, &c.). H. Snellen, on suture in entropion ('Ophth. Hosp. Rep.,' iv, 62).

EXOPHTHALMIC GOITRE.

In a paper by Dr. J. O. Fletcher ('Brit. Med. Journ.,' 1863, i, 529), five cases of recovery from this affection are related. The first case, a Mr. C—, aged 26, after much mental anxiety and overwork, had an attack of hepatic colic. Scarcely recovered, he married, and went on a tour; on his return, Dr. Fletcher "found him sitting up, able to walk a short distance, and then failing, not for want of muscular power, but from the severe palpitations caused by the slightest motion or excitement. He was greatly emaciated, his clothes hanging upon him in folds. The eyes protruded to a considerable extent, and were more than ordinarily brilliant. The rest of his face was pale, sickly, wasted, and expressionless; no wrinkles nor painful expression, but rather a want of it; yet the peculiar staring of the eyes gave him a most wild look, intensified by every motion of the body or mental excitement. The colour of the skin was peculiar, being something between the paleness of simple anæmia and slight jaundice, differing from the greenish yellow of chlorosis or the malignant tinge. When he was spoken to, the face flushed slightly, the eyes started more from their sockets; he complained of increased palpitations, throbbing in the neck and head, and constriction about the throat, which caused him to remove all covering therefrom. He complained of the heat of the room, although it was a cold night, and requested the fire to be removed, and the window to be opened, evincing a great tolerance of cold and intolerance of heat. Upon examining the heart, it could be

felt beating in its normal situation, with a tumultuous jerking impulse. He observed this symptom three days after his marriage. The palpitations were increased by alteration of position and excitement to a considerable extent, giving him the idea, as he expressed it, 'as if it would jump out of the chest, or burst.' There was a loud systolic murmur, extending along the great vessels. On percussing the region of the heart, I did not perceive any increased vertical or horizontal dullness. The carotids could be seen beating most violently, and gave a loud bruit. The abdominal aorta could be felt pulsating in the same way through the thin, wasted abdominal walls, and here also the bruit was heard. The radial pulsations were 136 per minute, full and soft; during excitement they had some of the violence and irregularity of the carotids; but at all times there was a marked difference in the radial and carotid pulsations. The thyroid body was enlarged, the lateral lobes being each of about the size of a duck's egg, the right a little larger than the left; it was soft to the feel, conveying a thrill to the fingers and a bruit to the ear. During excitement the gland increased in size, the thrill and bruit were increased. He noticed the enlargement of the thyroid gland fifteen days after the palpitations, eighteen days after his marriage. There was a distinct venous murmur in the jugulars. The abdomen was flat, and gave the normal physical signs, except the pulsations and bruit of the aorta, and increased vertical and lateral dullness over the regions of the liver and spleen. The limbs were much wasted, the tissues hanging flabbily to the bones; there was slight œdema of the ankles. The eyes projected from the orbits; by pressure of the finger the protrusion could be diminished, but it returned on the removal of the pressure. He could move the eyes freely in any direction, but the tendency was to look straight out. The coats of the eye were not injected; vision was perfect, but there was a great disinclination to read, because the fatigue and consequent excitement caused an increase of the palpitations. The skin was cool, except during a paroxysm of excitement, when it was covered with a clammy perspiration. The urine was slightly increased in quantity, specific gravity 1021, pale, acid, deficient in urica, but otherwise normal. The tongue was clean, except near the base, where there was a creamy fur. He had much thirst, the desire being for acid liquors. Whilst on the Continent he had taken freely of the light acid wines, which were no sooner taken than rejected, as he thought, from their not agreeing with him; he therefore day by day changed his wine, without any different result. This irritability of the stomach had troubled him during the convalescence from the attack of colic, and up to the time of his leaving England he had only been able to take milk diet without great risk of its being rejected. His appetite was variable and capricious, the desire being for highly seasoned soups, which were frequently rejected. In this way he accounted for the emaciation. He had diarrhoea during the first ten days, the stools being 'dark and bilious;' then constipation, which still continued. The bowels had not acted for three days before this evening; the motion was scanty and pale. He complained of inability to sleep; he could not lie upon the left side, in consequence of the increase of palpitations; nor on the right side, from difficulty of breathing; nor on his back, from con-

striction of the throat; the only way in which he could sleep was in a semi-recumbent position, or upon his stomach. For more than three months, he said, his sleep had been disturbed and unrefreshing, from mental anxiety; and now he thought 'sleep had almost forsaken him.' He went to bed with a fixed impression that he would not get an hour's sleep, and arose in the morning, nervous, fretful, irritable, and morbidly anxious. He had gone to bed night after night of late, rising in the morning worse than on the previous day. He gave this as the reason for sitting up in his present emaciated condition.

"The treatment consisted of nutritious, unstimulating food, in small quantities and at short intervals; a full dose of morphia at night to produce sleep, digitalis to steady the heart, and tincture of sesquichloride of iron to improve the condition of the blood.

"He was under this treatment for a month, and at the end of December, 1858, went to the west coast for a month, without medicine, and returned perfectly well. The improvement in the symptoms followed the order of their appearance—better nights, less irritability of the stomach, more perfect digestion, diminished excitement of the heart, gradual loss of bruit, sinking of the eyes, and diminished goitre. When he left for the sea-side, there still remained a little of the goitre, but it was quite gone on his return. Up to the present time (over four years) he has enjoyed perfect health, and passed a critical examination in London in connection with a life assurance society."

T. Laycock, on the cerebro-spinal origin and the diagnosis of the protrusion of the eyeballs termed anæmic ('Edinb. Med. Journ.,' viii, 681); and on the causes and nature of the vascular kind of bronchocele, and of the pulsations and palpitations termed anæmic (ib., ix, 1). J. W. Begbie (ib., ix, 198). Case of the occurrence of all three symptoms—exophthalmus, bronchocele, and heart affection, in a single night, during which the patient's father died ('Gaz. d. Hôp.,' 1863, p. 389). Three cases ('St. Petersb. Med. Zeitschr.,' iv, 343).

MUSCLES OF THE EYE.

Dr. H. D. Noyes records a case in which he brought forward the insertion of one of the recti, as first performed by Guérin, and since more widely promulgated by A. von Graefe ('Amer. Med. Tim.,' 1862, ii, 350). Twelve years previously the patient had a converging strabismus, which, owing to an operation, had been converted into the divergent form. "To correct the deformity, simple division of the external rectus was evidently inadequate, and the following operation was undertaken. The aim of the operation was to give to the divided muscle an attachment to a part of the globe nearer to the cornea, so as to enable it to act at a greater mechanical advantage. The loss of power is due to two causes—first, that the muscle has been shortened, and, secondly, that its insertion has slipped backwards. The first fault is irremediable; the way in which the second impairs the power of the muscle is evident on a moment's reflection. The normal insertion of the ocular muscles is a little in front of the equator of the globe. So long as its attachment continues to be at or in front of the equator, a muscle acting alone

simply turns the eye about its centre. But where the insertion slips behind the end of the transverse diameter into the posterior quadrant of a great circle, the turning power rapidly diminishes as the sine of the arc grows shorter; at the same time the muscle tends to pull the eye back into the orbit. The muscle is further weakened by the approximation of its origin and insertion, rendering its contractions less efficient.

“Operation.—Patient etherized; eyelids separated by the wire speculum. The first step was to find and dissect up the insertion of the internal rectus muscle. An incision, a quarter of an inch long, was made vertically through the conjunctiva, at a reddish elevation which marked the original insertion of the rectus internus. The conjunctiva was dissected off the sclerotica and off the external surface of the muscle by scissors for a depth of one half or three fourths of an inch. It was accidentally cut through before reaching the muscle. The insertion was sought for by a blunt hook—was found to be composed of a small bundle of fibres, not more than one fourth the normal breadth. Seizing it with forceps, it was separated from the globe and from its surrounding attachments, and loosened, until its extremity could be pulled as far forwards as the edge of the cornea. The next step was exposure of the *external* rectus muscle. A thread armed with a needle at each end was passed twice through the tendon, so that, when tied, it should include in the loop its whole breadth. The muscle was then severed just behind the thread. In these dissections the wounds made in the conjunctiva were as small as practicable, and the subconjunctival areolar tissue divided as sparingly as possible. The reason for this caution is, that the nutrition of the cornea may be perilled by the diminution of its vascular supply; nearly one half of its blood-vessels are sacrificed, at any rate.

“By the thread fastened to the tendon of the external rectus, the eye could now be turned inward to the utmost degree. In doing this the divided external rectus could not slip entirely away from the globe, because its lateral attachments to the tunica vaginalis oculi had not been cut; at the same time the internal rectus applied itself to the sclerotica, very near the margin of the cornea. To maintain this extreme inversion the thread was carried across the bridge of the nose, which was protected by a compress, and fastened by isinglass plaster upon the opposite cheek. The thread, in passing out of the eyelids, pressed upon the border of the upper lid, and to correct this, another thread was attached to the middle of the first, like a guy, to pull it down, and fastened by plaster upon the right cheek. The eyelids could be shut completely, and the thread was held tense. April 20th.—Patient was kept in bed for ten days, and the thread kept *in situ* forty-two hours. But little inflammation ensued; lids moderately swollen; external ecchymosis very extensive; general injection of the sclerotic; no chemosis, no pain. Convergence is decided; a fold of conjunctiva projects at inner canthus. Has double vision. May 12th.—The redness of eye almost gone; has made use only of cold lotions. The tendon of the external rectus to which the thread was fastened, and the sclerotic into which the tendon was inserted, have sloughed. There is deep venous congestion at this spot. The cornea entirely transparent. Patient no

longer sees double, except when looking far to the right side. When looking straight before him, the visual axes are parallel. There is necessarily a decided limitation in the excursion which the eye can perform; but the range of its rotation, so far as it reaches, now corresponds to the other eye. October 3rd.—The position of the globe remains the same—its correction being perfect—but the arc of rotation is no greater. There is a slight degree of prominence of the eyeball. A black spot marks the original insertion of the external rectus. Patient is much gratified with the improvement of his appearance. Does not have diplopia.

"This operation is troublesome to perform, and requires for its success great docility on the part of the patient. The thread ought to be retained in place for twenty-four hours. I kept it in longer, because the patient made no complaint of it. When removed, after only twelve hours, the muscle has been found to adhere firmly; but the longer the extreme inversion is kept up, the better will the new union bear the strain. There need be no fear of producing permanent converging squint. It is better that convergence should be the immediate result, because the eye will adjust itself in a little time, as the new union stretches. The same proceeding may be used in cases of paralysis of one of the ocular muscles. The muscle must not have entirely lost its contractility, and the paralysis must be old enough to be sure that no further improvement is to be expected by natural efforts. Bringing forward the paralysed muscle enables it to act at a greater advantage, and the slight weakening of the antagonist, which the operation produces, is in favour of the paralysed muscle."

F. C. Donders, on the pathogenesis of strabismus ('Arch. f. Ophth.,' vol. ix, part i, p. 99). The researches on the accommodative and refractive diseases of the eye have assisted in the highest degree in clearing up the pathogenesis of squinting. The following remarks are drawn from 280 cases which Donders most carefully examined; the sex, age, ordinary occupation, refractive condition and range of accommodation, extent of motion, constancy or variability of the squint-angle, time and manner of occurrence, hereditary influences, complications, such as diplopia or contraction of the field of vision, were always noted. The most important points discovered were, that convergent squint is usually the result of hypermetropia, and divergent of myopia.

(1) *Pseudo-strabismus*.—The visual lines* are parallel when two eyes, unaffected by strabismus, fix an object situated at infinite distance. If they are not parallel, there is strabismus; but even if they are parallel, there may be pseudo-strabismus. The latter plays an important part in the development of true strabismus, and must accordingly be first discussed. It depends on the relations of the visual lines to the corneal axes. The two do not coincide; the one is intersected by the other in the single knot-point (of the reduced eye), and the visual line strikes the cornea at the nasal side of the axis. The angle formed by these two lines at the knot-point averages, according to the observa-

* For an explanation of various technical terms used in this paper, the reader may be referred to an article entitled "Recent Researches on the Optical Relations of the Eye," 'Brit. and For. Med.-Chir. Rev.,' 1862, vol. xxix, p. 1.

tions of Dr. Doyer and Prof. Donders on fifteen emmetropic eyes, 5.082° ; its maximum is 7° , its minimum 3.5° . Thus, when the visual lines are parallel, or in other words, when a man with normal eyes looks straight forward, the corneal axes diverge, and form with one another an angle of $2 \times 5^\circ = 10^\circ$. Now, we naturally decide from the direction of the corneal axes in what direction the eyes are looking, and yet this (physiological) divergence gives us the impression of parallelism, and not of (pathological) divergence, simply because it is the normal condition. This angle, however, becomes greater in hypermetropia, smaller or even negative in myopia; there is, therefore, often pseudo-strabismus divergens in the former, in the latter pseudo-strabismus convergens; in the former the divergence may increase from 10° to 18° , in the latter may assume even a negative value of 9° . Such deviations depend upon peculiarities in the structure of hypermetropic and myopic eyes. Donders is inclined to think that the so-called strabismus incongruus of J. Müller is nothing more than the pseudo-strabismus here described.

(2) *Convergent strabismus* is in most cases connected with hypermetropia (in 133 out of 172 cases). The latter is the primary affection, for it is present at the very commencement of the so-called periodical strabismus, and such a commencing squint at once disappears on the correction of the refractive condition. The tendency to strabismus is excited in these cases by the great efforts to accommodate which the hypermetropic patient is obliged constantly to make, and especially in the vision of near objects; the squint is an immediate consequence of the intimate connection between the degree of convergence and that of accommodation. Two alternatives are presented to a hypermetropic patient:—(1) The instinctive employment of binocular vision; by this means he remains free from strabismus, but as he cannot then converge the eyes to the degree necessary for the correction of the optical defect, he is obliged to be satisfied with only an indistinct perception of objects. (2) The instinctive use of distinct vision; he abandons binocular vision and induces the necessary (pathological) convergence, or, in other words, he begins to squint. As, however, there are far more cases of hypermetropia uncomplicated than complicated with strabismus, it appears that there must be some special causes which induce the second course. Such are congenital differences in the acuteness of vision or in the refractive condition of the eyes, corneal opacities, and other conditions which diminish the importance of binocular vision, or such as facilitate the occurrence of convergence—peculiarities in the structure or innervation of muscles, or ready mobility of the eyes inwards. The very great angle between the visual line and corneal axis, which occurs in hypermetropia, might be expected also to promote the formation of a squint, for in such cases the eyes can only diverge to the necessary degree with difficulty; and thus if the regulating influence of binocular vision is once lost, convergence ensues. This supposition is confirmed by a number of cases tabulated by Donders; they show that under similar conditions a large angle of divergence forms a special predisposition to strabismus. In the highest degrees of hypermetropia strabismus is rarely observed, because even an abnormal increase of the

convergence would not excite sufficient accommodation in such cases. Strabismus is, therefore, most frequently met with in moderate degrees of hypermetropia (relative hypermetropia). It may be stated, as a general rule, that the less the range of accommodation, and the greater the angle between the corneal axis and visual line, so much the less will be the degree of hypermetropia necessary to excite squinting. The fixation of near objects, and especially of those placed to one side, has often been adduced as a cause of squinting. Donders is convinced that strabismus is not produced in the emmetropic eye in such a manner; but he admits, that in cases of hypermetropia such a habit might facilitate its occurrence.

This form of strabismus generally commences about the age of five; it is at first periodical, occurring upon efforts at distinct vision. Diplopia does not occur, probably because the deviation only occurs during attempts to distinctly see some particular object, to which alone the attention is accordingly directed. In most cases the squint becomes at an early period constant and concomitant; the deviation is, as the rule, permanently restricted to one and the same eye; the movements of the eyes are easy, the range of lateral mobility of both eyes increased to the inner side, diminished to the outer side, although one is always deviated, the other constantly directed in the right direction. Both internal recti must, therefore, be contracted. This contraction of the internal recti, at first dynamic, becomes organic when the squint becomes constant; it is a consequence of excessive action, with relaxation of the antagonistic muscles; there is no pathological change of tissue. Fixation induces increased convergence even when the strabismus has become permanent; after tenotomy the same increase is often noticed. As squinting may be prevented in the first stage (that of periodical squinting), so after an operation a recurrence may be obviated by convex glasses, which neutralize the hypermetropia. The deviated eye soon diminishes in acuteness of vision, and when the amblyopia has attained a high degree, fixation becomes excentrical. Hypermetropia has not been recognised by earlier authors as a cause of convergent strabismus.

(3) *Strabismus divergens* is, as the rule, connected with myopia. The divergence is, however, not induced actively, as is the convergence in hypermetropia, but passively, owing to the increased length of the optic axis, which impedes the globe in rotating. The mobility both inwards and outwards is at first affected. There is insufficient mobility inwards, when the visual lines cannot be made to intersect at a distance of two and a half inches ($=$ an angle of 51°). Now, since the angle between the visual line and corneal axis is, in cases of myopia, very small or even negative, still greater convergence of the corneal axes is required than in hypermetropia. The insufficiency just mentioned induces in some cases muscular asthenopia. If deviation of an eye (outwards) occurs during great exertion, as a consequence of such insufficiency—a circumstance which sometimes diminishes, sometimes increases, the troubles of the patient—relative strabismus divergens is present. The visual lines are properly directed to objects at a distance; only one eye is employed on work close at hand. There is always relative strabismus divergens, even when the convergence is unaltered,

when the furthest point of distinct vision is nearer than that which can be attained by the utmost convergence, thus when the myopia is greater than $\frac{1}{2.5}$. Accordingly, whilst relative strabismus divergens may occur

in high degrees of myopia, unattended by any insufficiency, it may also appear without myopia in cases where the insufficiency is extreme. Its most important form is where a moderate degree of myopia appears in combination with insufficiency. An ordinary degree of insufficiency would only induce muscular asthenopia; accompanied by myopia, it induces divergent strabismus. Muscular asthenopia is thus avoided at the cost of binocular vision. Opportunities are frequent for observing the different phases of the contest between binocular vision and relatively divergent strabismus. Cases are exceptionally met with in which, with extreme myopia, there is a great power of converging, though, indeed, at the cost of the mobility outwards. More frequently, however, the convergence is not sufficient for such cases, and we then meet with a strange combination of relatively divergent strabismus during vision of near objects, and relatively convergent during that of distant objects, whilst a certain range of binocular vision remains for medium distances. Such a condition recalls to mind the combination of myopia with presbyopia.

Absolute divergent strabismus is characterised by the visual lines diverging also in the vision of distant objects; it ordinarily excludes all binocular vision, though in some few cases a tendency in the opposite direction is temporarily noticed during vision of objects placed at a particular distance, a few feet or inches. Absolute divergent squint is rarer than the convergent form, and myopia is less frequently the cause of the former than hypermetropia of the latter. If, however, cases of both absolute and relative divergent strabismus are counted together, the convergent form would be the less frequent; myopia is found in about 90 per cent. of the cases of relative divergent strabismus.

The reasons for the change of the relative into the absolute form are—want of the regulating action of binocular vision during the fixation of near objects, the tendency to separate double images more widely, perhaps also the effort to exclude the high tension of accommodation associated with the difficult convergence. On the other hand, there are some causes which impede such a metamorphosis, thus the impulse towards binocular vision and the limitation of the mobility of the eye outwards. Individual peculiarities decide; just in analogy to the convergent strabismus caused by hypermetropia, the absolute form is promoted by such conditions as facilitate motion outwards or take away the value of binocular vision. Inequality of refractive power must be specially mentioned in respect to the latter. In short, hypermetropia causes accommodative asthenopia, which is actively overcome by convergent strabismus; myopia induces muscular asthenopia, which is passively avoided by divergent strabismus.

A. von Gräfe, on muscular asthenopia (*'Arch. f. Ophth.'* vol. viii, part 2, p. 314).

J. W. Hulke, cases of abscess and of tumour of the orbit (*'Ophth. Hosp. Rep.'* iv, 88).

Lachrymal organs.—M. Fano, hypertrophy of the palpebral portion of the lachrymal gland ('Gaz. d. Hôp.,' 1862, p. 529). Dr. Hirschler, on stillicidium ('Wien. Med. Wochenschr.,' 1862, p. 721).

Refraction and accommodation.—H. de Haas, historical researches on hypermetropia (Rotterd., 1862, and 'Klin. Monatsbl. f. Augenb.,' 1862, p. 31). M. Tetzner, abnormal conditions of refraction ('Allg. Wien. Med. Zeit.,' 1863, p. 170, &c.). A. Burow, a new optometer (pp. 36, Berlin, Peters). F. J. Bunstead, on astigmatism ('Amer. Med. Tim.,' 1863, ii, 203).

Malignant disease.—II. Walton says ('Med. Tim. and Gaz.,' 1863, ii, 216)—"What is to be done when a patient is brought to us with supposed medullary cancer? It is certain that, if the suspected disease be present, it will increase, and no general treatment can be available. Are we to operate? It is equally certain that no cure is to be found in removing the eyeball. The invariable result of such attempts has been recurrence of the disease locally, and there are always tumours of the brain or other vital organs, generally called secondary, but frequently incorrectly so. From all that I have seen, and most certainly when the optic nerve is involved, I fully believe that death has occurred sooner than if the disease had been left to run its course. There is not an unequivocal case of recovery on record. The hasty reports given in the journals a week or two after the operations as 'successful operations for soft cancer of the eyeball—extirpation for cancer—cure,' and so forth, tend greatly to mislead the medical public. I am not now, be it remembered, discussing the question of operating for malignant affections in general; for I must say that in some—hard cancer, for instance—I fully believe that, under certain restrictions, life is prolonged by it, that a part of the term to be lived is passed through with less suffering, and that hope, rather than despair, prevails. It is medullary cancer only of the eyeball that I am considering."

J. W. Hulke, six cases of intraocular cancer ('Ophth. Hosp. Rep.,' iv, 81).

Conjunctiva and cornea.—H. Demme, case of canceroid simulating phlyctenular disease ('Schweiz. Zeitschr., i, 301). E. Theremin, statistics of purulent conjunctivitis in the foundling hospital at St. Petersburg ('St. Petersburg. Med. Zeitschr.,' v, 97). A. Geissler, report on military ophthalmia ('Schmidt's Jahrb.,' vol. 116, p. 81). Dr. Marston, on epidemic ophthalmia in the central London district schools ('Arch. of Med.,' iii, 183, 266). M. Furnari, on conjunctival tonsure ('Ann. d'Ocul.,' vol. xlix, p. 172). C. Bader, on syndectomy ('Ophth. Hosp. Rep.,' iv, 19). Mr. Critchett, on the operation of abscission in staphyloma (ib., p. 1). F. Marsdin, on keratitis (ib., p. 30). II. Snellen, on the diseases of the cornea and conjunctiva (ib., p. 58).

Iris.—K. Stellwag, on iridencleisis ('Wien. Med. Wochenschr.,' 1863, p. 449). Dr. Magavly, on iridodesis ('St. Petersburg. Med. Zeitschr.,' iii, 225). Dr. Wecker, on iridodesis ('Ann. d'Ocul.,' vol. xlix, p. 186). Prof. Hasner, on posterior synechia ('Prag. Viertelj.,' 1862, iv, 137). T. Windsor, on the operation for artificial pupil ('Brit. Med. Journ.,' 1862, ii, 464). W. R. Beaumont, new iris forceps ('Med.-Chir. Trans.,' vol. xlv, p. 175).

Calabar bean.—D. A. Robertson ('Edinb. Med. Journ.,' viii, 815, and 'Ophth. Hosp. Rep.,' iv, 38). T. R. Fraser (ib., ix, 36, &c.). D. Hanbury ('Brit. Med. Journ.,' 1863, ii, 239). G. Harley (ib., 262). T. Nunneley, on its use in prolapsus of the iris ('Lancet,' 1863, ii, 65). C. J. Workman ('Ophth. Hosp. Rep.,' iv, 112). J. W. Ogle, the Calabar bean paper ('Brit. Med. Journ.,' 1863, i, 673). A. von Gräfe ('Deutsche Klin.,' 1863, p. 285).

Lens.—Prof. Arlt, on the causes of failure in extraction ('Deutsche Klin.,' 1862, p. 474). A. von Gräfe, clinical lecture on extraction in marastic eyes, &c. ('Klin. Monatsbl. f. Augenh.,' i, 172, 185). T. Windsor, on the use of forceps in extraction ('Brit. and For. Med.-Chir. Rev.,' vol. xxxii, p. 219). J. Jacobson, a new and innocuous operation for cataract (Berl., Peters).

GLAUCOMA.

J. H. A. Haffmans has published (Diss., Utrecht, and 'Arch. f. Ophth.,' vol. viii, part 2, p. 124) an exposition of the views and experience of Prof. Donders with reference to *glaucoma*. In his sketch of the history he shows that Weller was the first to give a good account of the symptoms; that Mackenzie in 1830 had perceived the importance of the increased tension of the eye; that E. Jäger, in 1854, drew and described the peculiar appearance of the entrance of the optic nerve; that a very little later, von Gräfe gave a still more accurate account of the ophthalmoscopic manifestations; that he added the fresh and very important symptom of arterial pulsation, traced the change in the optic disc to excavation, and finally referred, with success, the whole of the symptoms to one origin, that of increased pressure in the vitreous space (see the translation of his essays, New Syd. Soc., 1859).

Prof. Donders distinguishes only two principal forms of this affection—*glaucoma simplex* and *glaucoma cum ophthalmia*. The former is the typical form. Whilst the globe increases in hardness, the papilla of the optic nerve becomes excavated, the vessels become displaced along the margin of the disc, gentle pressure induces arterial pulsation, the anterior chamber is lessened in size, the power of accommodation is lost, the field of vision becomes contracted, and its acuteness diminished. In typical cases the increased tension persists, the excavation increases, the arteries become very small, and complete blindness is the result. Throughout the course of the disease every symptom is the necessary and immediate consequence of the increased intraocular pressure. The media may remain transparent even for years after the occurrence of total blindness. Ciliary neuroses occasionally occur, yet never to a high degree. Inflammatory symptoms are entirely absent. Coloured halos around flames are rarely seen. The subconjunctival vessels become somewhat enlarged; the sclerotic continues white; the cornea smooth and brilliant, though less sensitive; the pupil dilated and fixed; the iris scarcely changes, however, in colour or tissue. Such an uncomplicated course is, however, somewhat uncommon; out of eighty-two eyes which had been blinded by *glaucoma*, seventy-three had presented inflammatory symptoms. On the other hand, we often meet with this form in the commencement of the disease; thus, in more than thirty

cases one eye had become blind from glaucoma cum ophthalmia, the other presented symptoms of glaucoma simplex. The first symptom is increased tension of the globe. The "amaurosis with excavation" of Von Gräfe is the glaucoma simplex of Donders, for in all cases that presented the characteristic form of excavation—that reaching to the edge of the papilla—he has found increased pressure. Not only can the increased pressure be felt by the finger in such cases, but its existence is also shown by the excavation, the more ready occurrence of arterial pulsation, by diminished depth of the anterior chamber, by the increased size of the subconjunctival vessels, and by the diminished range of accommodation.

The slower the increase of intraocular pressure, the deeper does the excavation become, before it interferes with vision, just as very great pressure can be borne on the brain provided it progresses very slowly. Donders has also found that the eye is less inclined to be attacked with inflammation when the pressure increases very slowly; inversely, a deep excavation and little loss of vision justify the supposition that the course of the disease has been slow.

What von Gräfe described as the premonitory stage is for the author glaucoma itself—glaucoma simplex, and identical with "amaurosis with excavation." The difference between the author's opinion and that of von Gräfe consists in the former believing that the increased intraocular pressure is present from the very commencement of the disease, whilst the latter appears inclined to attribute it to the inflammation which so often occurs at a subsequent period. The pressure very rapidly augments when inflammation occurs; but even when no inflammatory symptoms have supervened, we find that the eye becomes, in the course of years, as hard as stone, and totally blind. Such a case has continued one of glaucoma simplex. The inflammation is a complication, though truly one of very frequent occurrence.

The conclusions of the author are as follows:

1. Glaucoma simplex may run its course to total blindness without the occurrence of ophthalmia, the globe becoming of stony hardness, the papilla of the optic nerve becoming much excavated and atrophied, but the media remaining clear.

2. Symptoms of inflammation, characterised by congestion of the vessels, pain, and turbidity of the media, very often complicate glaucoma simplex, especially in its earlier stages. These symptoms lead to perfect blindness, either by violent attacks with intermissions, or as an insidious inflammation with repeated slight exacerbations. When inflammation occurs, the tension becomes notably augmented, and the symptoms dependent upon pressure rapidly progress.

3. It is not proved that a primary glaucomatous inflammation occurs in any case where the intraocular pressure has not been already increased.

As to the origin of the affection, the author sets up the hypothesis that it depends on a condition of irritation of the nerves, which regulate secretion in the eye.

Donders traces a connection between the arterial pulsation and the interference with the power of vision. He has found, by pressing on

healthy eyes that obscuration of the visual field occurred as soon as the pressure caused arterial pulsation. The obscurations are often transitory in glaucoma; so is likewise the arterial pulsation. It thus appears that the obscurations depend at first on the condition of the circulation, and are not directly caused by pressure on the optic nerve and retina.

The coloured ring seen around the flame of a candle has been attributed to the augmented pressure on the retina. The author shows that it is a physical phenomenon, caused by the peripheral portion of the media. The reason for the frequent occurrence of this symptom in glaucoma is partly because the pupil is much dilated, partly, perhaps, from some change in the lens, which causes greater diffraction.

Contraction of the visual field occurs in every form of glaucoma, though it is not in glaucoma simplex one of the earliest symptoms. Hardness of the globe is often followed by distinct excavation of the papilla and displacement of the vessels, before any contraction can be found. Whether the field of vision is intact may easily be discovered, if the patient closes one eye and looks with the other at that of the observer, the left eye of the patient being directed to the right one of the observer, and conversely. The surgeon now moves his hand, or some object, midway between his own and the patient's eye, so as to convince himself whether the latter sees it whenever he himself can. The acuteness of excentric vision may be tested in the same way to some extent, by comparing the power of counting fingers, or of recognising various objects. It is not uncommonly found that in some parts of the visual field the power of recognition is diminished when no distinct contraction has occurred.

As to the operation, Donders considers the excision of the piece up to the very periphery of the iris of greater importance than its size. He mentions Mr. Bowman's method of seizing the iris at one end of the incision, incising it, tearing it away up to the other end, and then cutting it off. Comparing his own results with those of von Gräfe, he finds that the operation is invariably rewarded with success wherever the results, according to the latter, are favorable. He has, however, obtained much better results, than von Gräfe's experience had led him to expect, in cases of glaucoma with chronic ophthalmia (von Gräfe's chronic glaucoma), and in those of glaucoma simplex (von Gräfe's amaurosis with excavation of the optic nerve). He is perfectly convinced that in glaucoma simplex, not only arrest of the disease, but also a gradual improvement in vision, and in many cases expansion of the contracted visual field, may be expected from a well-performed iridectomy. The essential indication is the increased tension; where excavation of the papilla and impaired vision are attended by increased hardness of the globe, benefit is to be expected from iridectomy.

A. von Gräfe has published *an account of his later experience of glaucoma* and the action of iridectomy ('Arch. f. Ophth.,' viii, 2, p. 242). As to the time when the operation should be performed in acute cases, he still holds to the same opinion that, as the rule, *the operation should be performed as early as possible in acute glaucoma*, although in some cases a little delay may be allowable. The condition of the vision

decides the urgency of the operation; if not much deteriorated, and if the ciliary neuroses are extremely violent, some delay and the previous use of subcutaneous injections of gr. $\frac{1}{4}$ to $\frac{1}{2}$ of morphia may be advisable.

He has seen, in old persons beyond fifty-five years, although extremely seldom (only four times), vision entirely lost in the course of a few hours, even in half an hour. He assigns to these cases the name of glaucoma fulminans. No cases more urgently require immediate operation. In one case, where no perception of light remained, the operation was performed twenty-eight hours after the occurrence of blindness; the patient could see next day the motions of a hand, and on the third day count fingers; the vision continued to improve till she could read Jäger's No. 3 at ten inches' distance; it has for the last year and a half remained unchanged. Another case, in which not a trace of quantitative perception of light remained, was operated on the third day after the supervention of blindness; two days later there was a very little perception of light, and after eight days the patient could count fingers in a small part of the visual field. In two months the improvement had reached its acme, so that No. 6 could be read at ten inches by means of convex glasses. In a third case the operation was performed after a period of fourteen days; it relieved the inflammatory symptoms, but had only a temporary effect on the vision; the very slight quantitative perception of light which ensued was again entirely lost in six weeks. The fourth patient was not seen until five weeks after the attack, which had caused total blindness in an hour and a half. No operation was performed. These cases show, von Gräfe remarks, that it is not always easy to decide that all vision is lost. He has seen four or five patients who could not distinguish the light of a brightly burning lamp, close at hand, from darkness, and who yet could accurately perceive the motion of a hand in a small portion of the visual field to the outer side. The earlier the operation, the better is the result.

In reference to some real or supposed inconveniences of iridectomy in glaucoma, the author remarks—

(1) That its performance in the acute form, but in that only, on one eye, hastens the outbreak of the disease in the other. Forty-three cases were submitted to operation during the first period of acute glaucoma, at a time when the other eye was either normal or only in the premonitory stage. Out of these cases an acute attack occurred in the second eye in nine instances within fourteen days from the former operation. Out of more than eighty cases, where the first eye had not been treated by operation, the second eye was attacked in only five within a month from the commencement of the disease. Such a circumstance should induce the surgeon to watch these patients carefully.

(2) That iridectomy in glaucoma does not promote the formation of cataract unless the capsule be accidentally injured. In more than four hundred cases of operation for glaucoma von Gräfe has seen cataract only once occur immediately after the operation, and in that case the capsule had been wounded. He takes this opportunity to remark that he had expressly recommended in his first publication on the subject (as Arlt has also done recently) a broad excision of the iris, reaching to

the ciliary insertion, and accordingly to make the internal wound quite at the periphery. He also recommends, as the rule, that the inner portion of the iris should be excised, and not the upper, a rule especially to be observed when the assistant is inefficient or the operator little experienced, and generally in all difficult cases.

(3) He has seen a peculiar "cystoid" form of cicatrization of the wound made in the operation, to a slight degree in one fifth, to a high typical development in about one fifteenth, of all the eyes thus treated for glaucoma. This form of healing has, in addition to some problematical advantages, positive disadvantages, and must therefore be opposed by proper treatment. As such may be enumerated, compression by a bandage as a prophylactic, and excision.

The author now admits "amaurosis with excavation of the optic nerve" into the category of chronic glaucoma. Every excavation of the optic papilla which presents the characters of an excavation from pressure, would accordingly be named glaucomatous. Yet it must be remembered that the excavation is only a symptom, and the essence of the disease is *the increased intraocular tension, with reaction on the functions of the optic nerve or retina*. He describes the characters of the excavation from pressure at length. He asks, "Has it fixed characters, and is it easy under all circumstances to distinguish an excavation from pressure from other depressions of the optic nerve caused by atrophy or by yet unknown causes. I consider this question of such practical importance that, even at the risk of repeating well-known facts, I shall once more enter upon its consideration. The following are the characteristics of the typically developed excavation from pressure :

"(1) In contradistinction to the physiological (central) depression, it *reaches* to the *margin* of the papilla.

"(2) It has a steep edge, even when not very deep. This furnishes an explanation for most of its ophthalmoscopical appearances ; first, the bendings and interruptions of the vessels ; then the peculiar displacement of the fundus of an excavation, owing to prismatic action, when a convex glass is moved hither and thither towards the margin ; for the whole fundus being relatively at a distance from the surface of the retina, owing to its steep descent, but its separate portions approximately in the same plane, the mutual position of the separate objects on the fundus is changed but little, whilst the excavation, as a whole (of course in proportion to its depth), is much displaced towards the margin. These signs are of special importance in regard to excavations from atrophy. The latter, even when very deep (a circumstance of rare occurrence), have a gentle slope, and are accordingly without the abrupt interruptions and bendings of the vessels ; the latter are only slightly deviated. For the same reason, the fundus of the excavation is not displaced as a whole and relatively strongly towards the margin, but when the convex glass is moved from side to side, the different portions of the excavation, in proportion to the gradually augmenting distance from the retina, approach or recede from one another.

"(3) A distinct enlargement takes place in the retinal veins, after they have emerged from the excavation, which is clearly caused by the

mechanical hyperemia at the point of bending, and which reaches its maximum close to the margin of the excavation. This is also an important difference from atrophic excavations, in which the vessels are generally diminished in size, and in which especially the sudden ending of congested veins at the margin of the depression is absent.

"(4) The arterial branches within the excavation pulsate either spontaneously or on the slightest pressure with the finger on the eye."

He totally rejects the idea of an idiopathic affection of the optic nerve in glaucoma, an idea which is unsupported by fresh specimens or yet by analogy.

The author doubts Donders' explanation of glaucoma, according to which an abnormal irritation of the secretory nerves is the remote cause—(1) because of the absence of any experimental proof; (2) because of the want of any connection between pressure and inflammation, whilst, on the other hand, inflammation sufficiently explains the increased pressure; (3) because in many cases of so-called glaucoma simplex slight transitory attacks of inflammation may be discovered.

He still defends the inflammatory nature of glaucoma, although he admits that a certain proportion of cases run their course without marked symptoms of inflammation, and that in the rest the pressure-symptoms continue during the intervals between the inflammatory attacks.

As to the classification of cases of glaucoma and the definition of their stages, he notices the *premonitory stage* (glaucoma imminens, incipiens). This stage is characterised by the periodical occurrence of the symptoms. The intervals present perfect intermissions, except that the range of accommodation remains somewhat limited, and that the tension of the eyeball is increased. The attacks are characterised in this stage by slight sluggishness and dilatation of the pupil, faint cloudiness of the aqueous humour, congestion of the retinal veins, iridescent vision, mistiness of sight, and occasionally—though by no means always—by ciliary neuroses. In more severe attacks all these symptoms are more fully developed; diminished size of the anterior chamber, indistinctness of excentric vision, even peripheral defects in the visual field, especially when the light is of little intensity, and arterial pulsation, make their appearance. *If the pupil and acuteness of vision are no longer normal during the intervals, or if the optic nerve becomes excavated, then the premonitory stage is past, and the case is one of developed glaucoma with periodical exacerbations of the symptoms.* Prof. von Gräfe considers the distinction of the premonitory stage to be of practical importance, because its duration is indefinite, and operative treatment may be delayed.

Cases of developed glaucoma (evolutum, confirmatum) may be divided into several forms:—(1) Those without inflammatory symptoms, the glaucoma simplex of Donders, the glaucomatous excavations or anauroses with glaucomatous excavation of the author. This form is scarcely ever preceded by a premonitory stage; about one third of the eyes attacked by it are myopic, a circumstance of otherwise uncommon occurrence; it occurs relatively more often than the other forms during

the first half of life. As the rule, one eye is attacked soon after the other. The pressure-symptoms are generally not very marked.

Glaucoma with intermittent inflammation.—The inflammatory attacks are very transient, and only characterised by extremely slight cloudiness of the ocular media; in their intervals we find diminished acuteness of vision, contraction of the field of vision, more or less distinct symptoms of increased pressure, and, as the rule, well-marked excavation of the optic disc.

Chronic inflammatory glaucoma.—It is sometimes preceded by a premonitory stage, sometimes by glaucoma simplex. After an acute attack the inflammation generally becomes chronic; such cases are characterised by the peculiar changes of the iris, and must be considered as belonging to the next subdivision.

Acute inflammatory glaucoma (formerly called arthritic ophthalmia).—The pressure-symptoms are most clearly marked. A premonitory stage is only exceptionally absent. The complete loss of quantitative perception (*glaucoma fulminans*) in a few hours may be noticed as demanding immediate treatment. A perfect intermission does not occur after an acute attack; there is, as the rule, a considerable remission, with partial restoration of vision. The further course varies; sometimes the sight is lost from chronic inflammation, sometimes its gradual diminution is attended only with symptoms of increased pressure, and not unfrequently it is brought about by the repetition of acute attacks.

Glaucoma consecutivum.—A name for the cases in which it results from other processes, as after corneal cicatrices, staphyloma, iritis, or sclerotico-choroiditis (see translation of A. von Gräfe's 'Memoirs,' New Syd. Soc., 1856, pp. 370-80).

Glaucoma absolutum, consummatum.—When quantitative perception of light has been lost for some time, and treatment is of no use in respect to vision.

Prof. Gräfe has had occasion to repeat iridectomy, owing to fresh symptoms of pressure, only ten or eleven times; three or four of these cases were in the latest periods (of glaucomatous degeneration), where the effect of the operation is always uncertain; four times owing to the first operation having been imperfectly performed, so that only three cases remain in which the effect of a single iridectomy was insufficient. The repetition of the iridectomy was successful in two out of the three. The repetition had the desired effect in all the cases in which the first operation had been badly performed, except in a single patient where, at a later period, symptoms of increased pressure again appeared. These numbers are of some value, for the total number of operations on account of glaucomatous conditions amounted to more than 400.

Prof. Gräfe concludes his paper with a number of remarks on the prognosis and treatment, in which he calls attention specially to two forms of glaucoma, one secondary to sclerectasia posterior, the other accompanied by contraction of the visual field towards the outer side, and points out that other means of treatment, such as leeches or laxatives, which were previously ineffective, have a beneficial action after iridectomy.

J. C. Solomon, some account of the operations practised in the nineteenth century for the relief of tension of the eyeball, glaucoma, &c. ('Brit. Med. Journ.,' 1863, i, 450, &c.). Prof. Arlt ('Wien. Med. Halle,' 1863, p. 247). Prof. A. Coccius ('Arch. f. Ophth.,' iv, part i, p. 1). Dr. Magavly, case of iridectomy; no return for two years, &c. ('St. Petersburg. Med. Zeitschr.,' iii, 226).

RETINA.

Prof. A. von Gräfe, clinical lecture on neuro-retinitis ('Klin. Monatsbl. f. Augenh.,' 1863, p. 3). 13th. Nov., 1862.—Auguste F—, æt. twenty years, unmarried; menstruated since fifteen; of healthy but somewhat delicate constitution; has suffered during last year from attacks of headache, sometimes ending in vomiting; in the intervals there were weeks during which she was entirely free from pain. A more than usually severe attack occurred three weeks ago. * The patient says she moaned many hours for pain, principally seated in the back of the head; then followed repeated severe vomiting, sopor; and, finally, a perfectly senseless condition, which is said to have lasted for three days. When she recovered her consciousness she was extremely depressed, and could not raise herself in bed, owing to the violence of the pain in her head; in both arms there were lancinating pains; the left was very weak and could not be completely raised; the corresponding hand could not be perfectly closed. Objects appeared double to the two eyes, cloudy to each eye separately. Some days later she noticed that the left eye squinted; the vision also became somewhat worse. Since then she has had at various times exacerbations of the headache, which, however, have never gone on to insensibility. The paresis of the left arm soon disappeared; the eyes remain in the same condition. The patient has, however, so far recovered as to be able to walk a quarter of a mile from her home to the hospital.

The first thing to be noticed to-day is the squinting position of the left eye. It is at least three lines to the inner side of its normal position when she is looking straightforwards. As to the mobility, we find, after closing the right eye, that the cornea cannot be moved even as far as the middle line from its abnormal position. This proves that the abducens is completely paralysed; we must admit, there is also some degree of contraction of the internal rectus, for a simple paralysis of the abducens would not be sufficient to account for either the great convergence when she is looking straightforwards or the imperfect rotation of the cornea towards the middle line. Just as the rectus externus has lost the power of voluntary contraction, so has the rectus internus lost that of voluntary relaxation. Independently of the paralysis, there is a disturbance of the antagonistic equilibrium, as is so frequently seen, either as a consequence of paralysis or as a coeffect of intracranial diseases.*

No other muscle is paralysed; the eye can be moved from its abnor-

* The contemporaneous development of a contraction of the internal rectus may, indeed, be of pathognomonic importance, just as much as a paralysis with contraction of an extremity. Such mixed affections occur, in general, when there exist causes of both pressure and irritation, the latter acting on the antagonistic

mal position yet further inwards, indeed as far as normally, upwards, downwards, and into the intermediate positions.

Let us now proceed to the next symptom, the interference with vision. She sees double; the diplopia disappears on the closure of one eye, and has all the characters proper to such a position of the globe. The double images are direct,* placed on the same level, and stand upright; they are at a great distance from one another in the middle line, and they separate still further when the object is moved towards the left side. The diplopia is not, however, the only symptom of defective vision. If she closes an eye, it matters not whether it is the right or the left, the vision remains very indistinct, which, as you know, is not the case in simple strabismus from a muscular affection. We can readily imagine that the power of accommodating may be also paralysed. Such a suspicion appears to me improbable, owing to the perfectly free action of the pupil, for it very rarely happens in such cases that the tensor choroideæ is affected without the sphincter. Trials with convex glasses, which we now accordingly apply, show that the accommodation is either not at all or only very slightly affected; and, on the other hand, that the acuteness of vision is much diminished, for with the right eye she deciphers specimens of print only under a visual angle thirty times greater, and with the left eye only under one twenty times greater, than the normal (Snellen's letters, No. xii, with the right eye and + 10 to 5", with the left eye and the same glass to 7"; No. vi, right side with + 5 not quite to 3", left side to 4"; the letter A in No. CC with both eyes to 12', and, indeed, furthest without any glass—illumination that of average daylight).

No way of explaining this amblyopia appears more easy than to assume that the optic nerve is paralysed, for the same intracranial cause which has produced paralysis of the abducens, contraction of the internus, and the former paresis of the left arm, may well be supposed to have interfered with the functions of the optic nerve. In such a condition as the present, examination of the field of vision is of special importance. We know that one-sided lesions in the substance of the brain, whether apoplexies, centres of inflammation, or tumours, whenever they interfere with the optic nerve, produce the so-called *same-sided hemiopia*. There is a hemiopic deficiency in the visual field of each eye to the left side when the cerebral lesion is on the right side—to the right, when the brain is affected on the left side—because the paralysed optic tract proceeding from the diseased half of the brain sends its fasciculus lateralis to the outer half of the retina on the same side, its fasciculus cruciatus to the inner half of the retina on the opposite side. Such a hemiopia is characterised, for simple anatomical reasons,

muscles; such a condition is, accordingly, far more likely to occur in encephalomeningitis than in simple breaking-up of the cerebral nervous substance by extravasations of blood. The squint which accompanies the well-known basal meningitis of children is generally the result of such a mixed condition, and not of a pure paralysis.

* Perhaps, "corresponding" would be a better term than "direct;" the meaning is, that the image on the right side belongs to the right eye, that on the left to the left eye.—T. W.

by its limits being abrupt, so that portions of the visual field, in which the acuteness of vision is relatively normal, impinge directly on portions entirely defective. The condition is similar to that in anaesthesia from section of the fifth nerve, where the loss of sensibility ends abruptly in the middle line of the face. It may be readily understood that the same must be the result when one optic tract behind the commissure is rendered incapable of performing its functions, owing to some cause at the base of the cranium. If the optic nerve is compressed in front of the commissure, it will, of course, only be prevented from conducting the impressions of the eye of the same side. Should some cause at the base of the skull, whether behind or in front of the commissure, press out from the middle line against the optic nerves, as not unfrequently happens, then the fasciculi cruciati will especially suffer, the inner half of each retina will be paralysed, and the outer half of the visual field will be affected; this is the so-called *lateral hemiopia*. You will readily understand that it does not end so abruptly as the same-sided form, for the effect of the pressure is not limited to some particular bundles of fibres; the inner bundles are the parts first and chiefly affected, the action gradually diminishing from within outwards towards the fasciculi laterales. And thus, in respect to the visual field, it will never happen that a part in which the vision is relatively normal will border upon a perfect defect; there will be a gradual transition from the one to the other. If we now examine our patient in this respect, we find that there is neither the one nor the other kind of hemiopia, but that an irregular portion to the lower and inner side is wanting in each visual field; when strongly illuminated, she sees in the directions just named the motions of a hand as far as the normal limits, the excentric vision being only indistinct; but when the illumination is less, this portion of the visual field is totally wanting. Such a contraction of the visual field may arise from cerebral causes when there are multiple or diffuse centres of disease, or from basal causes, such as exudations, impeding the action of the fasciculi laterales of both sides; it is, however, rare for it to arise from such causes—its more frequent origin is disease of the optic nerve or retina. We have, therefore, a special reason for asking whether any peripheral lesion of the optic nerve complicates the disease—I say *special* reason, because, owing to the frequency with which neuro-retinitis forms a complication of intracranial processes, it is generally necessary to examine this possibility in the diagnosis. Examination with the ophthalmoscope shows, in fact, great changes in the optic nerve and retina; especially on the right side is the papilla of a deep-gray colour, opaque, and slightly swollen; its choroidal limit invisible, owing to the cloudiness of the superjacent retina; the retina over a space several lines in diameter is diffusely clouded; when much magnified, this cloudiness presents here and there an appearance of delicate stripes; nowhere are there apoplexies or groups of opaque spots, or the yellowish-white patches, characteristic of fatty degeneration; the veins are much enlarged and serpentine, at places rendered indistinct by the turbid retina, and then again appearing more distinctly. On the left side these changes are undoubtedly present, though not to the same degree. The retinal lesion perfectly

explains the condition of the vision, and there can be no doubt that it is also the cause of the contraction of the visual field, for it is a matter of experience that such processes scarcely ever leave it intact, although, of course, we cannot account for the exact form of the contraction.

Our *diagnosis* is accordingly—*bilateral neuro-retinitis*, with consecutive amblyopia, and circumscribed excentrical contraction of the field of vision, *in company with an intracranial lesion*. The latter must be considered, from its symptoms, as a basal meningitis, possibly developed from chronic meningitis, which had existed for a longer period. It is possible that this inflammatory process may result from some other disorganization, of which, however, there are no sufficient symptoms. The constitution of the patient gives us no assistance. The lungs are healthy, nor is there any hereditary tendency to tuberculosis. Examination of the circulatory and abdominal organs, of the digestive functions, and of the urine, gives a perfectly negative result. The history shows no trace of earlier scrophulosis or syphilis. We are, therefore, obliged to hold to the simple supposition just given, which is, indeed, supported by tolerably frequent analogous cases.

The prognosis in general appears dubious; the present attack of meningitis appears to have reached its conclusion, and thus there is no fear of its extending further. But, on the other hand, there is no reason why it should not recur. Nor can any certain prognosis in respect to the power of vision be deduced from the existing symptoms. Perfect restoration is improbable, because such processes of neuro-retinitis lead, as the rule, to partial atrophy of the optic nerve and retina in cases where the visual field has once become contracted. Among more favorable symptoms we find that the margin of the visual field is still at a considerable distance from the point of fixation; that the power of distinguishing, though much lessened, is still tolerable in comparison with the condition of the retina, and that, according to her account, there has been no further deterioration for eight days. The prognosis is certainly more favorable in respect to the power of distinguishing than in reference to the field of vision. In general, we may assert that this is by no means an example of the worst course of neuro-retinitis, for in other cases, of which we have at this moment two examples in the clinic, all power of vision is entirely lost in a few days.

As the patient has yet attacks of cephalagia and periodical febrile augmentations of the temperature, the treatment will consist of local bloodletting behind the ears, of nitrate of potash with the infusion of senna internally, and of a derivative regimen.

24th November—second presentation of the patient.—In general, she has been better; there has been no pain in the head for the last six days. The condition of the muscles and fundus of the eye, and the deterioration of vision, remain essentially the same. To-day, as the acute symptoms have subsided, we shall stop the medicines recently ordered; we shall direct that a seton be applied through the nape of the neck, and that the bichloride be administered internally, such means being those from which we have seen the best effect in chronic meningitis unattended by any special indications.

4th December—third presentation of the patient.—She looks much better, and has gained both in colour and tone, a proof that the treatment, which has no directly strengthening property, is exercising a beneficial influence on the morbid condition. The abducens is still completely paralysed, for when the right eye is closed, the left cannot be rotated over the middle line; the contraction of the internus has somewhat diminished, as is proved by the less amount of deviation—by about a line—when she looks directly forwards, and by the increased power she now possesses of moving the eye outwards towards the middle line. The statement of the patient, that she has seen considerably better for some days, has just been accurately tested. Patients often make such egregious errors that it is always necessary to submit their accounts to trial, before any deduction can be drawn. In this case the examination has proved a satisfactory improvement, though it has shown that the visual field of each eye still remains in the same defective condition; it has demonstrated that the acuteness of the right, which was formerly the worse eye, is ten times better, and that of the left, now the weaker eye, is four times greater. She now deciphers Snellen's letters No. xii with $+$ $\frac{1}{40}$, by the right eye to 4', by the left with $+$ $\frac{1}{30}$ to $2\frac{1}{2}'$; No. i, right eye with $+$ $\frac{1}{8}$ to 4"; left eye, No. ii with $+$ $\frac{1}{8}$ to 5"; and recognises with both eyes the letter C at a distance of more than 30'. The ophthalmoscope shows that the retinal veins are less swollen and serpentine; it also proves that white discoloration of the papilla and atrophy of the arteries, so ominous as signs of commencing atrophy, are not in progress. Such a course is certainly very cheering in respect to the further treatment, but it will require a longer period before the final result is decided.

Dr. Zehender appends to this lecture a note, in which he states that, according to a letter of the 26th December, 1862, from Prof. von Gräfe, the patient had continued to improve, both in her general condition, and in her power of vision; the paralysis of the abducens had disappeared, but the visual field remained in the same state.

Retinitis leucæmica.—Dr. Liebreich has figured in his atlas an example of this disease. He remarks that it is characterised by the pale hue of all the retinal and choroidal vessels, and especially of the retinal veins. The latter are large and tortuous, the papilla is very pale, and the retina around it is clouded; there are little irregular spots in the region of the macula lutea. Finally, there are numerous brilliantly white, round spots, which only differ by their very peripheral position from those occurring in Bright's disease. The author considers that this affection depends on the general condition just as much as the retinitis accompanying syphilis and albuminuria. In his opinion, idiopathic retinitis, or, in general, idiopathic diseases of the retina, are extremely uncommon. Whilst idiopathic affections of the choroid are far more frequent than those caused by syphilis or other constitutional diseases, lesions of the retina are the result either of diseases of the choroid, injuries, &c., or of irregularities in the general circulation of the body, of disease of the heart and kidneys, of syphilis, &c.; such is, at least, almost always the case when the affection of the retina is symmetrically spread over a large portion of the fundus. The author has

seen six cases of retinitis leucæmica, and has found in all essentially the same condition; in one case Dr. von Recklingshausen found that the white spots were caused by the same form of sclerosis of the nerve-fibres, as that which occurs in the retinitis of Bright's disease according to H. Müller.

J. C. Wordsworth, case of spontaneous pulsation of the arteria centralis retinae during temporary faintness ('Ophth. Hosp. Rep.,' iv, 111). H. D. Noyes, effects of albuminaria on the retina ('Amer. Med. Times,' 1862, ii, 323). Dr. Blessig, on retinal hæmorrhage ('St. Petersburg. Med. Zeitschr.,' iv, 273). Prof. A. von Gräfe clinical lecture on a case of retro-bulbar abscess, separation of the retina, &c. ('Klin. Monatsbl. f. Augenh., i, 49). A. Mooren, on retinitis pigmentosa (ib., p. 93). H. Walton, case of retinal separation, in which a puncture was made for the evacuation of fluid ('Brit. Med. Journ.,' 1863, ii, 363). J. H. Jackson, on defects of sight in brain disease ('Ophth. Hosp. Rep.,' iv, 10).

Hemeralopia.—R. Förster, on the limits of the field of vision, and on hemeralopia ('Deutsche Klin.,' 1862, p. 475). A. Netter, on dark rooms in the treatment (Paris, G. Baillière, and 'Ann. d'Ocul.' vol. xlix, p. 164). M. Bitot, on a conjunctival affection, hitherto undescribed, accompanying hemeralopia ('Gaz. Hebdomadaire,' 1863, p. 284), and J. A. Villemin (ib., p. 332). Dr. Eitner, epidemic of hemeralopia ('Deutsche Klin.,' 1863, p. 245).

E.A.R.

At the request of Dr. Kramer, a committee was appointed by the Berlin Medical Society to examine some points in dispute between him and Erhard. It was composed of Krieger, Leyden, von Recklingshausen, Teuber, Virchow, and reported to the following effect ('Deutsche Klin.,' 1863, p. 258):

The programme drawn up by Dr. Kramer states—

1. That when air is blown into the Eustachian tube by means of the catheter, it really passes into the tympanic cavity, though the membrana tympani is entire, because—

2. The accompanying sound is produced by friction of the ingoing air against the membrana tympani and the walls of the tympanic cavity. Alterations in the tube or in the walls of the tympanic cavity cause alterations in the sound, by means of which the former may be recognised.

3. The air that is thus blown into the tympanic cavity, when the membrana tympani is entire, necessarily returns back into the pharynx through the Eustachian tube if the blowing is continued.

4. Catheterism enables us to recognise, not only permeability of the tube in general, but also very various degrees of contraction of it.

5. The tube is always pervious, yet it does not follow—

a. That the tympanic cavity always contains air, and—

b. By no means that it is not the seat of the functional disturbance.

6. According to my conception of the action of air driven through the instrument, the catheter is indispensably necessary only in the

treatment of free exudations in and on the tube and tympanic cavity.

7. Bougies can be passed into and through the Eustachian tube as far as the tympanic cavity, by means of the catheter, and are decidedly required for the treatment of strictures of the tube.

Dr. Kramer commenced his demonstrations by showing to the committee a series of Eustachian catheters and bougies. By means of an otoscope, provided with three ear-pieces, so that three members of the committee could listen at once, he pointed out that—

1. The listeners hear a loud full blowing sound, which appears to arise close to their ears, when he blows through an Eustachian catheter into the end intended for the patient.

2. This sound is in no way changed, when a piece of goldbeater's skin is interposed between the apertures of the tube and the ear-pieces.

3. On the other hand, it becomes notably altered when a plug is placed at any point between the tube and the ear-piece, or when the tube is compressed at any point. In the former case no sound penetrates through the tube to the ear of the listener; in the latter it becomes, according to the degree of compression, weaker and weaker, and at the same time more distant, until at length it entirely disappears.

Dr. Kramer then presented a number of patients.

1. The full, blowing sound, which apparently arises close to the ear of the listener, was heard in one case by means of the otoscope when air was blown through the catheter introduced into the tube.

2. In another case Dr. Kramer showed that this full sound could not be produced by blowing air through catheters Nos. 1 and 2, but only through No. 3.

3. A female, in whom no sound could be heard through the otoscope when air was blown with the usual intensity; when, however, air was forced more powerfully and for a longer period through higher number of the catheter, a weak (distant) sound was perceived, which increased in intensity, but then again became at times weaker, or entirely disappeared. It occurred by fits and starts, and gave the impression that there were some obstacles to the transmission of sound through the tube to the ear of the listener, and that these were occasionally removed or overcome by the blowing.

4. In another case air was blown in through No. 2; a weak-blowing sound was heard; with No. 4 it was somewhat stronger, but did not attain by any means to the normal full sound.

5. Dr. Kramer also showed on another patient that the full sound could not be produced with Nos. 1 and 2, but only with No. 3.

To demonstrate the passage of instruments into the tube (as far as the tympanic cavity), Dr. Kramer employed thin caoutchouc bougies. On these, white dots marked the spots which corresponded to the posterior aperture of the catheter when the point was at the anterior aperture, or $\frac{1}{2}$, 1, $1\frac{1}{2}$, and 2 inches beyond.

Dr. Kramer was able, in three cases, to push the bougie through the catheter introduced into the tube as far as the third mark, so that its point must have projected beyond the end of the catheter an inch and

a half, and if it remained in the tube, must probably have reached to the tympanic cavity. The bougie could not be seen in the pharynx, and presented no particular bending on its being removed.

These demonstrations showed that—

a. Very various sounds are heard by the listener when air is blown into the patient's tube. The difference consists essentially in variations of the intensity, so that the sounds sometimes appear to arise near to, sometimes at a distance from, the ear. Such sounds are probably produced only at the pharyngeal aperture of the tube, and the intensity with which they are heard varies not only according to the strength of the blowing, but also according to whether the tube conducts the sound well or whether it presents some obstacle to the transmission of the acoustic waves. Such impediments may occasionally (Case 3)—probably when they are situated near the guttural termination of the tube—be temporarily removed or overcome by stronger blowing. That the air, which is blown in, passes into the tympanic cavity, is not proved by any of these demonstrations.

b. It is probable, but not proved, that the bougies were introduced into the tube.

At the proposal of the committee, Dr. Kramer undertook the following experiments:—Two little glass tubes, of about two millimetres in diameter and an inch and a half in length, were so made that their anterior end was dilated like a trumpet, their posterior end blown-out into a sphere; the latter was entirely closed in the tube *a*, but opened and covered with goldbeater's skin in the other, *b*. In this way, some approximation was made to the conditions of the tube and tympanic cavity. If a little lock of cotton was placed in the anterior aperture, and then air blown in by means of a catheter of moderate calibre, the lock was driven a little further, but then soon thrown out again by the stream of air. If, before blowing, the lock was introduced somewhat further into the narrower part of the tube, it could not be driven the least further, even by the strongest blowing; it remained exactly at the same spot. On attempting to inject water by means of an India-rubber ball, it was seen to pass a certain distance along both tubes, but not a drop could be driven directly into the spheres; finally, after repeatedly inclining the tubes, blowing, and injecting, a few drops ran along the walls into the spheres. Under certain conditions the injected water passed into the sphere of the tube *b*. The following seemed necessary:—1. That the tube should be two millimetres wide; 2. That the thickness of the stream of water should not exceed half a millimetre (catheter No. 1). And 3. That the direction of the latter should be as exactly parallel as possible to the axis of the glass tube.

*Demonstrations on the subject.**—I. Dr. Kramer attempted to introduce the bougie into the tube. In many cases he met with such resistance that he could not push on the bougie. In two subjects out of five he succeeded. In one of them the tympanic cavity and tube were opened from above; the point of the sound was in the tympanic cavity.

* Dr. Kramer himself introduced the catheters and bougies in the following experiments on the subject.

II. In one subject obstacles were found to passing the bougie; examination with the otoscope when air was blown into the tube showed that there was some impediment to the conduction of sound. The bougie, after it had been introduced for one inch, met with resistance; this was overcome on the right side by repeatedly drawing the bougie backwards and pushing it forwards, so that it then penetrated an inch and a half. Now the stream of air had also become free. On the left side there was the same resistance at the corresponding spot; it was not forced, but the tube was opened. The point of the bougie was in the tube close to the tympanic cavity; the tube, just before opening into the tympanic cavity, presented a bend, and passed in an oblique direction; far from being contracted, it was very wide. On the right side the bougie was introduced, and the tube opened; it presented the same bend, and the point of the bougie struck directly on the head of the malleus.

III. A dilute solution of iodine was injected through the catheter into the Eustachian tube of a subject on whom the bougie could be easily passed, and where a full sound could be heard by the otoscope. The tympanic cavity and posterior end of the tube were then opened, and the starch test applied; there was no trace of reaction.

The same experiment was repeated on two other tubes; in the one there was a dubious trace of reaction, in the other none at all. Chloride of iron gave no trace of reaction in the tympanic cavity and the posterior end of the tube, after a solution of ferrocyanide of potassium had been injected.

IV. In a case where the bougie could be readily introduced into the right tube, and a full free sound could be heard by the otoscope, the tympanic cavity was opened from above, a little lock of cotton was introduced, and the aperture was covered with a small watch-glass, which was rendered air-tight by the use of cement. Air was now blown through the catheter into the tube. Although by auscultation the full sound could be constantly heard, the cotton in the tympanic cavity did not show the slightest trace of motion. Little drops of water on the floor of the cavity showed a slight change of level when air was forcibly blown, evidently owing to the increased atmospheric pressure.

Since these experiments on blowing had given essentially negative results, Dr. Kramer was induced by the committee to institute some further essays in the following manner:

Extremely delicate elastic catheters, through which injections and insufflations could be made, were introduced through the silver catheter into the tube, just in the same way as the bougies previously mentioned. It had, indeed, been found, that water could be injected into the spheres of the glass apparatus when a very fine injecting canula was used instead of the nozzle of the India-rubber ball; it was by no means necessary to push the canula far up the glass tube—a positive result was gained when the point of the canula was within the anterior aperture of the glass tube.

V. 16th March.—Catheter No. 3 was introduced into both tubes of

a male subject, but on blowing into them there was heard only a very distant dull, not a sonorous near, blowing sound. The bougie, one millimetre in size, could only be pushed three quarters of an inch, and then met with an invincible resistance. After the tympanic cavities had been opened from above, the point of the bougie was found to be fixed on the left side at a flat osseous projection, on the right side in a narrow portion of the cartilaginous tube. There were no signs of a pathological change.

VI. 18th March.—Auscultation gave on both sides of a male subject a full, sonorous sound. A bougie, one millimetre in size, could be passed on both sides through catheter No. 4 an inch and a half, and thus into the tympanic cavity; an elastic catheter of two and a half millimetres, open anteriorly, passed only three quarters of an inch. Through it a sonorous, blowing sound could be heard, which, it may be incidently noticed, must have originated in the tympanic cavity, and not in the guttural extremity, as the instrument passed so deeply. A solution of carmine, which was now injected through the elastic catheter, was afterwards found in abundance in the tympanic cavity.

The same experiment was repeated on the left side—with this difference, that the elastic catheter had an aperture laterally, and not at its extremity. On opening the tympanic cavity, none of the solution was found.

VII. On the body of a man, aged 32, a sonorous, full blowing sound was heard by catheterization and auscultation of the left tube. The elastic bougie (1 millimetre) easily passed an inch and a half; the elastic catheter, open at its extremity, would only pass three quarters of an inch, but the sonorous sound could be also heard through it. A solution of carmine was injected, and then air was blown in, a crackling sound was heard, and a large amount of the solution was found on opening the tympanic cavity.

VIII. In the case of a girl, aged 21, where the bougie of one millimetre passed an inch and a half, and the catheter, open at its end, three quarters of an inch, black ink was injected, and afterwards blown-in through the elastic catheter. A very crackling sound was heard, which, as in the previous experiment, must have been caused by the direct entrance of the air into the tympanic cavity, for the point of the catheter was found at the point of union of the osseous and cartilaginous portions of the tube, exactly as in the previous experiment, when the tympanic cavity and tube were opened from above. The tympanic cavity and the cells of the mastoid process contained a large quantity of ink.

IX. 28th March.—On a female subject, a bougie of one millimetre could be passed an inch and a half into the left tube, whilst one three fifths of a millimetre in size only penetrated seven eighths of an inch on the right side. There was found on the right side a considerable lateral deviation of the osseous portion of the tube.

From these demonstrations and experiments the committee draws the following deductions:

1. Air does not pass into the tympanic cavity, when it is blown through the wide silver catheter introduced into the pharyngeal orifice

of the tube, the membrana tympani being entire. Nor can, in that manner, any considerable quantity of a liquid be injected into the tympanic cavity, even where the permeability of the tube has been proved by the bougie and auscultation. On the other hand, both succeed when a fine elastic catheter is introduced as far as the osseous portion of the tube.

2. The sounds produced by blowing arise in the tympanic cavity, only when the second method is employed; those which are perceived, when air is blown through the ordinary silver catheter, probably arise within the pharyngeal extremity of the tube.

3. A change in the latter shows some obstacle to the conduction of sound; it also shows whether the obstacle is moved or not by blowing, but no conclusion can be drawn from it as to changes in the walls of the tube or tympanic cavity.

4. It must remain for the present a question whether "free exudations" can be removed from the tympanic cavity by blowing through a very delicate catheter.

5. It has been proved beyond all doubt, that bougies can be introduced through the catheter as far as the tympanic cavity.

6. The value of bougies in respect to diagnosis and treatment can therefore be scarcely doubted.

M. Triquet, clinical lectures on the diseases of the ear (pp. 260, Paris, F. Savy). J. Erhard, clinical otiatry (Berl., Hirschwald). Dr. Voltolini, the dissection and examination of the organ of hearing (1 pl., pp. 27, Bresl., E. Morgenstern). Dr. Erhard, on physical diagnosis ('Deutsche Klin.,' 1862, p. 424); and reply by Dr. Tröltsch (ib., 475). J. Gruber, cases ('Spit. Zeit.,' 1863, p. 29, &c.). J. Böke, contributions on pathological anatomy (ib., p. 377, &c.). H. Schwartz, retrospect of the last ten years ('Schmidt's Jahrb.,' vol. 116, p. 248, &c.). A. Lucae ('Arch. f. pathol. Anat.,' xxv, 339). Dr. Voltolini, dissections (ib., xxvii, 159). Dr. Moos, on the sudden occurrence of deafness ('Wien. Med. Wochenschr.,' 1863, p. 641, &c.). A. Pagenstecher, report on 220 cases ('Deutsche Klinik,' 1863, p. 399, &c.).

Eustachian tube.—Dr. Gruber, on pathological states of the tube ('Wien. Med. Halle,' 1863, p. 280). A. Politzer, new treatment of obstructions ('Wien. Med. Wochenschr.,' 1863, p. 84, &c.; and Allg. Wien. Med. Zeit., 1863, p. 235, &c.). H. Schwartz ('Deutsche Klin.,' 1863, p. 367).

Tympanic cavity.—J. Hinton, sebaceous tumour ('Guy's Hosp. Rep.,' ix, 264). Dr. Schüller, on the diagnosis of catarrh ('Wien. Med. Halle,' 1863, p. 396, &c.).

Internal ear.—J. Gruber, on caries ('Wien. Med. Halle,' 1863, p. 4, &c.). Dr. Voltolini, on diseases of the labyrinth and auditory nerve ('Sachs' Med. Alman.,' 1864, p. 292).

LIP.

Cancer of the lip.—Dr. W. Stricker ('Arch. f. pathol. Anat.,' xxv, 600) speaks in high terms of a thesis on this subject by Dr. L. Lortet (Paris, 1861), and gives an analysis of the portion on etiology.

Predisposing causes.—(A) *Sex.*—It has long been noticed that cancer of the lips principally occurs in the male sex. In different regions women form from one twentieth to one fifth of the cases, as is shown in the following list:—Lebert (Paris), 15 males, 3 females ('Tr. d. Mal. Canc.'). Gault, 20 males, 1 female. Bertin (Montpellier), 24 males, 3 females. Melzer (Laibach), 127 males, 15 females ('Jenaische Ann.,' 1850, ii, 480). Heurtaux (Paris), 69 males, 10 females ('Thèse, du Cancroïde,' Paris, 1860). Bruns (Tübingen), 50 males, 5 females ('Handb. d. Chir.,' 1859, ii, 535). Barrier ('Gaz. Méd. de Lyon,' 1852, and by letter) observed 71 cases, from 1850-55, 62 males and 9 females; in 59 cases the lower and in 12 the upper lip was affected; of the latter, 6 were males, and 6 females. In 181 cases collected by Desgranges ('Gaz. Hebd.,' 1854) there were 158 males, 23 females; the part affected was in 169 the lower, in 22 the upper lip, and in 6 the angle of the mouth. All these cases together give 527 males, 69 females, or a ratio of 7 $\frac{8}{9}$ to 1.

(B) In 252 cases, only one occurred under the age of twenty,—in a girl of sixteen. From the thirtieth year the disease increases in frequency up to extreme old age, the number of the cases being compared with the number of those living at each particular age. Of course the absolute number of cases diminishes in proportion to the advance in years, for at the age of 60 there remains only a fifth, at 70 an eighth, at 75 a twelfth, at 85 a ninety-third part of those born; the very aged, besides, rarely agree to an operation.

Lebert found in 17 cases of cancer of the lip 2 aged from 30 to 35, 1 from 35 to 40, 2 from 40 to 45, 7 from 45 to 50, 2 from 50 to 55, 3 from 60 to 65 years.

Bruns found that the disease commenced in his 55 cases in 2 between 20 to 30, in 9 from 30 to 40, in 11 from 40 to 50, in 13 from 50 to 60, in 15 from 60 to 70, and in 5 from 70 to 80 years.

(C) *Temperament, occupation.*—Dr. Lortet believes that the sanguine temperament predisposes to this disease. Most of the cases seen by him were blonds, with red faces and fully developed capillary circulation. Both Lortet and Bruns agree in considering the disease more frequent in those residing in the country. In 181 cases collected by Lortet there were 107 countrymen, 12 weavers, 4 gentlemen, 4 masons, 4 shoemakers, and 4 joiners, 2 wheelwrights, 2 wood sawyers, 2 servants, and 19 without fixed occupation. The excessive amount of agriculturists does not in any way correspond to a predominance of the country population in the nine departments from which these patients were drawn. There were 1,095,000 residents in the country out of a total population of 3,924,000, or rather more than a quarter, whilst the number of cases occurring in agriculturists is over five ninths.

(D) *Clinical and geographical conditions.*—Heurtaux collected twelve cases of hereditary origin, to which Lortet is able to add four or five more, a number too small for any deduction. More abundant, though yet insufficient, are the materials for determining the geographical distribution of the disease.

There were 181 cases out of a total of 3217 operations performed at Lyon from 1850 to 1860.

In Sweden the disease appears to be very rare. Rossander, principal surgeon to the large hospital in Stockholm, says, "From 1850 to 1859, out of a total of 2200 operations, 17 were performed on 16 persons—12 men and 4 women, for 'cancer of the face;' all the patients were peasants from the neighbourhood of the city. The disease seems to be yet rarer in the mountains than in the lowlands. The remaining hospitals of Sweden are small, so that the total number of operations performed in them can scarcely amount to more than that performed in Stockholm."

There was thus at Lyon 1 operation for cancer of the lip in 17; at Stockholm 1 in 137, or, deducting cases of cancer of other parts of the face, about 1 in 200 operations.

According to a letter from Dr. L. Benjamin in Hamburg, only two cases occurred there from 1854 to 1857.

The disease appears to be very rare in Prussia. On the other hand, according to Melzer, 453 cases of cancer, and among them 142 cases of cancer of the lip, occurred in a total of 27800 patients, in sixty-two years, at the hospital of Laibach.

Switzerland.—According to Vogt, Socin, and Jung, the disease is tolerably common at Bern and Zürich, rare at Basle, where in thirty-eight years only three cases were observed at the surgical clinic.

According to Bertin, there were 33 cases of cancer of the lip in 895 operations performed at Montpellier from 1851 to 1857. According to Berrut, three cases of cancer of the lower lip occurred amongst 1607 surgical cases at Marseilles in 1857.

Dr. Lindermayer, who has practised at Athens since the liberation of Greece, had observed only two cases up to 1860, and other medical men had only seen a few rare cases in the country districts.

Dr. P. Faure, who for years has been travelling in Asia Minor, Syria, Palestine, Mesopotamia, Egypt, and Nubia, found every kind of cancer scarcely known in those regions.

Dr. H. Barth, the celebrated traveller in Africa, observed only a single case of cancer (in a man), although consulted by innumerable patients. In the tribe of the Beni-Meluk, on the Niger, some days' journey west of Tombuctu, he met, however, with an affection of the skin somewhat resembling cancer of the lip; the tribe was not, indeed, purely African, but composed of a mixture of Berbers and Arabs.

Livingstone and Lantré never met with this disease among the aborigines of Southern Africa. The latter, who passed many years among the Bassutos, to the north of Cape Colony, never saw a single case of cancer of the face, an affection which is by no means rare among the white inhabitants of Cape Colony.

So far as is at present known, cancer of the lip occurs most frequently in central Europe, a region of which, however, we have the fullest knowledge.

Tobacco has been repeatedly blamed as a potent cause, and especially smoking short pipes. In 1795 S. T. Sömmering ('*De morb. vas. absorb.*,' p. 109) considered that the pressure of the pipe on the lower lip caused

cancer. Rigal and Bonnet blame the irritation of teeth injured by the pipe. Rechnitz maintains that cancer of the lip is very frequent in Hungary, because the acrid juice of the very strong tobacco, which is chewed or smoked there, irritates the lips. Güntner ('Prag. Viertelj.,' vol. xlii, p. 64), remarks, that almost all his patients had been passionate smokers; on the second or third day after the operation, he found them secretly smoking behind the bed-hangings. Bouisson ('Montpellier Médical,' 1859) adduces forty-nine cases of cancer of the lip, all of which were in smokers. On the other hand, Bardeleben has operated on many patients in Greifswald, who had never smoked ('Canstatt's Jahresber.,' 1854, iv, 183). Fleury, in Clermont, has observed similar cases. Bruns had only ten great smokers in fifty-five cases, and one, in whom the disease affected the left angle of the mouth, asserted that he had always held his pipe in the right side of his mouth. Heurtaux also saw such cases; four out of nine cases reported by him had never smoked, and in five smokers the disease was only in two where the pipe usually rested. Lortet could trace no effect of smoking in the cases at the Hôtel-Dieu at Lyon. According to Heurtaux, Lemarchand had seen at Finistère, where almost all the women smoke short pipes, about 100 cases of cancer of the lower lip in men, and not a single case in a woman. We have already mentioned, that in the East, where everybody smokes, cancer of the lip does not occur. Further geographical and statistical facts must be collected, before any certain decision can be reached as to the etiological conditions.

Have lip.—T. Bryant, statistics, date of operation ('Brit. Med. Journ.,' 1863, i, 339). D. P. Smith ('Amer. Med. Times,' 1863, i, 207). W. Steinlin ('Arch. f. Klin. Chir.,' iii, 125). M. Broca, extraordinary case ('Gaz. d. Hôp.,' 1862, p. 125).

Stammering.—P. H. Wolff, new treatment ('Deutsche Klin.,' 1862, p. 228). A. Clemens ('Journ. f. Kinderkr.,' vol. 38, p. 315). E. Lichtenstein, on laloplegia ('Deutsche Klin.,' 1862, p. 62, &c.).

Tongue.—H. Demme, on glossitis ('Schweiz. Zeitschr.,' ii, 73). A. Prichard, sphacelus ('Brit. Med. Journ.,' 1862, ii, 487). M. Foucher, removal by the écraseur, hæmorrhage, ligature of the carotid ('Gaz. des Hôp.,' 1862, p. 518). Dr. Nottingham ('Med. Times and Gaz.,' 1863, i, 641). E. Böckel, temporary resection of the lower jaw, removal of cancer of the floor of the mouth, &c. ('Gaz. Hebdomadaire,' 1863, p. 304).

Immobility of the lower jaw.—('Gaz. d. Hôp.,' 1862, p. 475, &c.; 'Gaz. Hebdomadaire,' 1862, p. 699). C. Heath, Esmarch's operation ('Lancet,' 1862, ii, 443, and 'Dubl. Quart. Journ.,' vol. xxxv, p. 323). B. Holt (ib., 1863, i, 91). A. Verneuil ('Gaz. Hebdomadaire,' 1863, p. 97). W. Grube, true anchylosis ('Arch. f. Klin. Chir.,' iv, 168).

Nares.—W. Lawrence, new operation for the removal of a large mass of polypi ('Med. Tim. and Gaz.,' 1862, ii, 491; 'Gaz. d. Hôp.,' 1862, p. 530). On rhinoscopy ('Arch. Gen.,' 1863, i, 333).

Palate.—Mr. Syme, tumour of hard palate ('Brit. Med. Journ.,' 1862, i, 401). J. R. Bennett, on destructive ulceration of the palate and fauces ('Med. Tim. and Gaz.,' 1862, i, 31). W. J. Coulson, operation for adhesion of the soft palate to the posterior wall ('Lancet,' 1862, ii, 529; 'Gaz. Hebdomadaire,' 1862, 783). Dr. Wirtinger, complete

union ('Wien. Med. Wochenschr.,' 1862, p. 438). G. Passavant, on congenital fissures of the hard palate ('Arch. d. Heilk.,' 1862, pp. 193, 305).

Uranoplasty.—Von Pitha ('Wien. Med. Wochenschr.,' 1863, pp. 369, &c.), and on staphyloraphy ('Wien. Med. Jahrb.,' 1863, i, 105). O. Weber, in young children ('Arch. f. Klin. Chir.,' iv, 295). Prof. Schuh ('Wien. Med. Wochenschr.,' 1863, p. 529).

Tonsil.—M. Demarquay, removal of a cancer ('Gaz. d. Hôp.,' 1862, p. 500).

L. Türk ('Allg. Wien. Med. Zeit.,' 1863, p. 98) succeeded in producing local *anæsthesia of the fauces* by repeatedly applying a mixture recommended by Prof. Bernatzik, and which was composed of three grains of muriate of morphia, one drachm of concentrated spirit of wine, and half an ounce of chloroform.

Pharynx and Œsophagus.—H. Weil, new forceps ('Wien. Med. Wochenschr.,' 1862, p. 741). Dr. Semeleder, on œsophagoscopy ('Wien. Med. Halle,' 1862, p. 319). Dr. Stabel, foreign body in the œsophagus ('Arch. f. Klin. Chir.,' iii, 420). J. W. Riggson, pins ('Amer. Med. Tim.,' 1861, ii, 389). Mr. Syme and M. Créquy, œsophagotomy ('Brit. Med. Journ.,' 1862, i, 299; 'Gaz. Heb.,' 1861, p. 700). A. Keller, on stricture ('Schmidt's Jahrb.,' vol. 118, p. 35).

TRACHEOTOMY.

Prof. Roser has published his experience and views of this operation in his 'Handbook of Anatomical Surgery' (4th ed., Tübingen, 1863), and in the 'Archiv der Heilkunde' (vol. ii). A full account of his opinions in regard to its use in croup is also contained in a 'Guide to Tracheotomy in Croup,' by M. Lissard (Giessen, 1861).

He points out, that it is of importance to distinguish threatening suffocation (*Erstickungsangst*) from asphyxia. Any obstacle to the free passage of air will induce symptoms of these conditions. Genuine suffocation is usually preceded for a longer or shorter period by premonitory symptoms; thus, in croup, the asphyxia follows a very marked stage of suffocative agony, during which children struggle with forced respirations to overcome the obstacle; in this period the blood is still very red,—indeed, even that of the veins is strikingly so. Should they be left in this condition till their muscular power is exhausted, and till asphyxia—overloading of the blood with carbon—has really commenced, the prognosis, will, of course, be much more unfavorable. Asphyxia sometimes occurs in a more acute manner, and is characterised by such symptoms as sudden blueness of the face, fixed and staring eyes, convulsive anxious exertions and struggles for breath,—or in the form of a more slow suffocation, with symptoms of great weariness and weakness, restlessness, oppression, anxious startings out of short slumbers, loss of consciousness and of feeling, sopor, the face being often pale and rather œdematous. Both the danger to life and the agony of the patient are proportional to the acuteness of the symptoms. An important sign of obstruction in the air-passages is sinking-in of the intercostal spaces, of the clavicular fossæ, and of the scrobiculus cordis,

during inspiration. Since the air cannot enter with sufficient ease, it presses with increased force on the more yielding parts during expansion of the chest. It must be, however, remarked, that the value of this sign increases in proportion to the slowness of inspiration, for even a healthy individual will present such a sinking-in, when the inspiration is rapid. The inspiration alone is usually impeded, the expiration being rapid and easy, whilst the former is difficult, very much lengthened, and noisy. Where the expiration is occasionally impeded, as by a foreign body or polypus, the sudden, as it were, valvular obstruction can be sometimes both heard and felt.

As to the administration of chloroform during the operation, the author is of opinion, that it is inadmissible in genuine asphyxia, when the blood is loaded with carbonic acid; in such a condition it is, indeed, quite unnecessary, for sensibility is so much diminished, that even children are sufficiently quiet for the performance of the operation. On the other hand, he recommends its use in the stage of suffocative agony, when children, for example, are extremely restless. In respect to the operation, he has found it often much facilitated by division of the isthmus of the thyroid gland; he passes and firmly ties a strong ligature around it on each side of the middle line, and then divides it without danger of bleeding. Professor Roser considers it an important rule—not to open the trachea till all bleeding has stopped. He himself, after much experience in the operation, and with practised assistants, had the misfortune to see a child suddenly die from the passage of blood into the trachea, a ligature on the middle jugular vein having been accidentally pulled off; he feels himself bound to oppose the most earnest warning to the carelessness, with which this subject is treated by most authors. He is aware of quite a series of cases, in which children perished on the operating table in the same manner; and he has become convinced, from experiments on rabbits, of the reality of the danger which arises from sudden coagulation of the blood in the bronchial branches. He has invented an instrument, somewhat after the eye-speculum of Kelly-Snowden, for pressing apart the lips of the wound when a sufficient number of assistants are not at hand. He makes frequent use of a bit of sponge held by forceps, and notes, that a sponge can be more rapidly cleansed by pressing it in a towel than by washing. After opening the trachea, as soon as the first expectoration is over, and before the canula is inserted, he passes through each edge of the tracheal wound a ligature, which must not be tied, but only be a little twisted, and fastened on each side with sticking plaster. The operator has then full command over the trachea, and can readily dilate the wound, a circumstance that much facilitates the insertion or change of the canula; he keeps the ligatures in for three or four days, and has not seen any injurious effect from them in some forty cases. There should always be an elastic catheter in the tracheotomy case; nothing promotes so conveniently and innocuously the discharge of false membranes, and excites expiratory movements, as the motion up and down of a catheter; such an irritation is especially required where asphyxia already exists.

He strongly recommends the transport of cases of croup from the country

into town, where they can be properly watched; he has not observed any injurious effect from the exposure to cold; he believes that croup differs *toto calo* from catarrh caused by cold. Tracheotomy in croup has been recently gaining ground. It is now perceived, that croup is a specific disease, differing in essential points from simple catarrhal affections, and that it is usually,—in the majority of cases—fatal. (It is frequently contagious; every precaution must be used, for many medical men have recently caught the infection and died.) It cannot be denied that children perish almost always from suffocation. It is true that after the operation many patients—up to the present time more than half—die from pneumonia, bronchitis, or the fever, but they do not perish from suffocation. The first indication is to prevent suffocation; when this danger has been overcome by opening the windpipe, every effort must be made to diminish the danger of pneumonia, &c. Tracheotomy is indicated in croup, so soon as there are urgent symptoms of obstruction of the glottis. It has been already noticed, that whilst in asphyxia caused by the gradual cessation of the oxydizing process of the blood, and by the progressive poisoning by carbonic acid, when the respiration is impeded, there are at the same time cold extremities, blue lips, livid countenance, cold sweats, and general relaxation passing into a soporous condition, the condition threatening suffocation is essentially different. The respiration is impeded, and the demand for oxygen is only satisfied by difficult, forced respirations; dreadful anguish is depicted on the reddened countenance, covered with sweat; there is extreme restlessness; the patient tosses from side to side, gets out of bed one minute, into it the next, and clutches spasmodically at those around him, as if seeking everywhere for help. *This is the proper period for the operation*; this is the time when success may be expected. Should the operation be longer delayed, symptoms of genuine asphyxia appear; and then, though it may enable the child to breathe freely, it has usually no longer power to resist the advancing bronchitis. Yet it is never too late to operate; so long as respiration continues,—life may possibly be yet saved. Roser has operated on or assisted in the treatment of forty-two cases in seven years; of these nineteen recovered, twenty-three died. In fourteen of the latter there were special, more or less avoidable, causes of death; thus in six there was far-advanced asphyxia when the operation was performed; three times death was probably owing to cerebral complications, twice to secondary disease (acute pneumonia after almost complete recovery, death on the fifteenth day; albuminuria, death in the third week); twice death occurred suddenly, in all probability from obstruction of the canula through fault of the nurse; once, very probably, from passage of blood into the trachea.

Prof. Szymanowski, new canula ('St. Petersb. Med. Zeitschr.' iv, 22), and remarks on the manner of operating ('Prag. Viertelj.' 1863, iii, 1). A. M. M'Whinnie ('Lanc.' 1862 i, 143). Dr. Matejovsky ('Prag. Viertelj.' 1862, ii, 1). M. Demarquay ('Gaz. d. Hôp.' 1862, p. 177). Mr. Spence, tracheotomy tube dropped into left bronchus ('Edinb. Med. Journ.', viii, 191). Dr. Burow, simplified operation ('Deutsche Klin.' 1862, p. 382).

NECK.

Thyroid Gland.

H. Lebert, the diseases of the thyroid gland, and their treatment (pp. 8 and 314, Breslau, Maruschke and Berendt).

Dr. Voss removed an enlarged thyroid gland from a lady aged 54 ('Amer. Med. Times,' 1862, i, 10). It had existed for forty-two years, and during the last seven years had occasioned such difficulty in swallowing and breathing that ultimately she was unable to lie down. The size of the tumour before the operation was equal to that of a clenched fist; the trachea was pushed towards the right side. The gland was removed without difficulty; a long incision having been made, it was separated for some distance, and the rest of the operation finished with the *écraseur*. Dr. Wood, in some remarks on this case, stated that a few operations of the same kind had been performed in New York, and that he knew that two of them had died from venous hæmorrhage.

M. Gouget, epidemic of acute goitre ('Arch. Gén.,' 1863, i, 101). A. Klein, dissertation on the surgical treatment of bronchocele (Tübingen, 1860; 'Arch. f. Klin. Chir.,' iii, Bericht, p. 286). Prof. Oppolzer, rheumatic inflammation of cervical vertebræ ('Spit. Zeit.,' 1862, pp. 503, 511). F. Semeleder, on inflammation of the cellular tissue of the neck ('Wien. Med. Halle,' 1863, p. 265, &c). O. Storch, on congenital hygroma of the neck ('Journ. f. Kinderkr.,' vol. 37, p. 68). M. Verneuil, tumour of the parotid ('Gaz. d. Hôp.,' 1863, p. 439, &c). L. J. Bauchet, on hypertrophy of the parotid ('Mém. de la Soc. de Chir.,' v, 289).

Larynx.

T. Bryants states ('Brit. Med. Jour.,' 1863, i, 448) that when tracheotomy is performed on account of a *foreign body in the air-passages*, "chloroform should be administered preparatory to the operation, as it may be given with perfect safety; for it not only tends considerably to prevent the spasm of the laryngeal muscles by allaying their irritability, but it enables the surgeon to perform his difficult duties with calmness and precision. A free section of the trachea is always to be made, in order to allow of a free passage for the expulsion of the foreign body; and in the majority of cases, this foreign body will be expelled as soon as the opening in the trachea has been accomplished. If any difficulty be experienced in obtaining this result, the child's body may be tilted upwards and the head downwards, to favour the gravitation of the substance; and a good shake or pat upon the back will at times dislodge it from its position, and consequently assist in securing its expulsion. If these means fail in carrying out the object for which they were undertaken, the child must be left alone; the opening in the trachea should, however, be made large, or even valvular, and means adopted to preserve its patency; so that, should the foreign body by any chance be subsequently dislodged from its position, its expulsion may be secured. The larynx itself should be always most carefully examined, not only before but after the operation; for it is not an uncommon thing to find the

foreign body firmly impacted within the rima, and consequently in a position from which its removal cannot be looked upon as being very difficult. In two of the cases which I have recorded, out of the three which proved fatal, after a futile attempt at the removal of the foreign body by tracheotomy had been made, I have already shown that the foreign body was subsequently found to be firmly impacted within the rima; and it is fair to believe that, if the foreign body had been previously removed from this position, a very different success would in both cases have been recorded. This laryngeal exploration must, however, be conducted with considerable care. The passage of a probe or fine catheter, or any other small body, through the rima from below upwards, is positively useless, as experience has proved that these means may be carefully employed, and yet the surgeon will fail in finding any obstruction; but the exploratory instrument must be a large one; indeed, it should be nearly as large as can be admitted through the rima; so that, if the foreign body lodge at this spot, it will necessarily be pushed upwards into the pharynx by its forcible passage. A large elastic catheter is unquestionably the best instrument for this purpose; and if this be employed in such cases, it may be unhesitatingly asserted that a more uniformly good success will in future have to be recorded. This practice would probably have added two more successful cases to the five which I have already mentioned, making seven successful instances of the removal of the body, out of the eight in which it had taken place. Within the last few months, I was present at the examination of a child who had died from the impaction of a bone within the rima, which had not been detected after the operation of tracheotomy, although a careful examination of the larynx was made with a fine instrument. It was impossible to see the specimen without a painful feeling of regret that a larger instrument had not been employed in the exploration, for the body was at once dislodged after death by the introduction of a catheter up the passage. In all cases, therefore, of foreign body in the air-passages, in which an expulsion cannot be obtained by the operation of tracheotomy, let the larynx be carefully examined by means of a large catheter, and its extremity passed from below upwards through the rima; the finger at the same time making a careful examination from above; for by these means, and these only, will a foreign body be removed from the rima glottidis.*

Mr. Spence, extraction of a foreign body from the bronchus ('Edinb. Med. Journ.,' viii, 979). Mr. Briddon, removal of necrosed cartilage from the larynx ('Amer. Med. Times,' 1862, ii, 327). Dr. Tobold, M. Verneuil, M. Trélat, on polypi ('Deutsche Klin.,' 1862, pp. 455, 467; 'Gaz. Hebdomadaire,' 1863, pp. 161, 292, &c.). G. Lewin, essay on new growths ('Deutsche Klin.,' 1862, pp. 19, 114, &c.). Dr. Rauchfuss, case of removal of a laryngeal polypus, and excision of one vocal cord

* J. F. May succeeded in dislodging a coffee-grain from the larynx by the use of a small whalebone probang, the sponge of which was calculated to fit the larynx rather closely, and thus to force anything it might encounter past the epiglottis. This instrument was introduced through the wound and forced upwards, until, by looking in the mouth, he saw it pass the epiglottis. ('Amer. Journ. of the Med. Sciences,' new ser., vol. 23, p. 412.)

(‘St. Petersb. Med. Zeitschr.,’ iii, 153). V. v. Bruns, the first extirpation of a laryngeal polypus, &c. (2nd ed. p. 76. Tübingen, H. Laupp). Mr Walker, removal of a polypoid growth of the larynx (‘Lancet,’ 1861, ii, 444). Prof. Czermak, on local treatment by means of the laryngoscope (‘Med. Times and Gaz.,’ 1862, i, 452), and on tumours in the larynx and nostrils (ib., 581).

CHEST.

II. J. Bowditch, paracentesis thoracis (‘Amer. Journ. of Med. Sciences,’ Jan. 1863, and ‘Canada Lancet,’ i, 33).—“Having performed paracentesis 150 times on 75 persons, during the past twelve years, besides being witness of ten other cases, I now give a brief *résumé* of my experience. I have never seen the least permanent evil ensue from any of these operations, and but slight temporary difficulty, as pain, dyspnœa, stricture, cough, &c. This, I think, sufficiently proves the innocuousness of the operation, by means of the exploring trocar and suction-pump, as suggested by Dr. Wyman, of Cambridge, Mass.

“*Frequency of the operation.*—I was once compelled to tap a patient, himself a physician, eight times in six weeks, to relieve his intense distress in breathing; and to operate on a lady nine times during eight and a half months, the first, being to save her from death from orthopnœa, was performed when she was over four months pregnant. I have also punctured one chest twice in the same day, in order to reach all the fluid which was divided by false membranes.

“*Number of perfect recoveries.*—Out of the whole seventy-five patients, twenty-nine recovered completely, and apparently in consequence of the operation, which was generally performed after severe symptoms had manifested themselves, and when I was called in consultation. In all these cases the tapping seemed to be the first step towards recovery.

“*The fluid.*—Of the seventy-five, the fluid obtained at the first operation was serum in twenty-six, of which twenty-one made good recoveries. If, afterwards, the fluid became purulent, I have noticed an almost certain fatality to attend the change; of six such cases, four have died, and the other two, when last seen, were failing. Pus flowed at first in twenty-four cases; seven of these recovered, and seven died. Relief is always obtained, but the tendency remains to a termination in fistulous openings or phthisis. A sanguinolent fluid at the first puncture, thin and of a dark-red colour, not coagulating, I consider almost certainly fatal, and a consequence of some malignant disease of the lung or pleura. Of the seven of these cases, six died, and the other is still lingering. But when the fluid becomes of this colour only at the second or any subsequent puncture, I deem it of comparatively little importance towards the prognosis. A mixture of bloody purulent fluid at the first operation is usually fatal; of three occurring, all died. A fetid gangrenous fluid is very rare; I have met with but one case, and although great and permanent relief was obtained from the orthopnœa, the patient sunk in a few days, when the pleura was found gangrenous.

"*Hydropneumothorax*.—Here paracentesis can do no harm, and may give great relief. I have operated once with much temporary benefit, and should not fail to do so again were the dyspnœa urgent.

"*No fluid*.—Finally, in seven cases I got no fluid whatever; this occurred most frequently in my earlier operations, and the failure was probably due to the cautious and slow manner in which I plunged the trocar between the ribs, carrying thus the false membrane of the pleura costalis before the instrument instead of piercing it, so that it really never entered the fluid. At other times I have little doubt that an error of diagnosis was made, and that instead of a fluid there was simply an unexpanded lung and thick, false membranes on the pleura, causing as much dulness on percussion and absence of respiration as if a fluid were present. The diagnosis of the two was not as easy to me then as now; inspection is the test between these two conditions; the intercostals are distinct and depressed when a membrane exists, but indistinct and level with the ribs, or possibly prominent, when a fluid occupies the chest. Once an immense tumour filled and uniformly distended one pleural cavity, and in its course presented all the phenomena, natural and physical, of simple pleurisy. I tapped it three times, namely, at the back, side, and front, at the same visit. No evil effect ensued.

"An inquiry has been made as to which side gives the most successful results. I regard an operation performed on the right side as much more favorable than one on the left, for about twice as many of the former have recovered as of the latter.

"Inspection of the chest should never be neglected, for when full of fluid there will be found a general roundness and immobility of the whole of the affected side. At times local swelling may develop itself, and this is especially apt to occur with the breast, which becomes unduly prominent. It is not often that bulging of the intercostal spaces takes place, for they are rarely more than on a level with the ribs, which frequently seem closer from contrast with those of the opposite side, that are so constantly on the stretch to fulfil their double duty. Where the effusion is great, vocal fremitus is wanting, and there is often exquisite sensitiveness to the touch over the whole of that side of the chest, which disappears after the removal of the fluid. The lung, unless bound by adhesions, is gradually displaced, and floats upon the fluid beneath. Should doubts arise as to the presence of effusion, change of position with palpation, as in dropsy, will remove them. As the liquid increases the lung becomes further compressed and forced backwards towards its root, until respiration can no longer be detected but at its apex and close to the spine behind; and other organs become removed from their positions. Mr. M'Donnell states that occasionally the heart, by giving impulse to the fluid through its mediastinal wall, may cause effusion to be mistaken for aneurism. I have never noticed any such effect.

"*When to operate*.—Experience has taught me always to operate without delay, when the pleural cavity has become distended with fluid, and the dyspnœa is great; for I have found that, when performed early, it prevents long tedious illness, future contraction of the chest, and the probable development of tubercle, or perhaps a troublesome

fistulous opening in the side. I also remove the effusion in all chronic cases where it will not disappear under a reasonable amount of treatment, for I have noticed that persons sometimes die suddenly of dyspnœa, with one side of the chest partly filled with fluid. I never wait for pointing, nor necessarily insert the trocar at any such point when existing, choosing rather the most depending part of the chest; and dislike or refuse to tap in all cases where the intercostals are depressed, never feeling certain of seeing anything flow away.

“*Where to operate.*—The most appropriate spot for puncture is between the ninth and tenth ribs, in a line let fall from the lower angle of the scapula. I have, however, tapped under the axilla, and even in the breast, when the case seemed to require it. But in selecting the precise intercostal space of the back, I usually choose one about an inch and a half higher than the line on a level with the lowest point at which the respiratory murmur can be heard in the healthy lung of the opposite pleural cavity.*

“*The operation.*—The instrument I employ is a small trocar, a little larger than the ordinary exploring trocars of our pocket-cases of instruments. When possible, the patient should be seated sideways on a chair, or astride with his face towards the back of it. Having pressed the forefinger of the left hand deeply into the intercostal space, I plunge the instrument through at the depressed part, keeping as near as possible to the upper edge of the lower of the two ribs, to avoid injuring the larger branches of the intercostal arteries, which run along their inferior borders. I never incise the skin before the introduction of the trocar [for I find when it, with its canula, will pass readily through buckskin or chamois—as it should do when well made—its insertion will be easy, and cause but little pain.—Ed.]. Having withdrawn the stilette, see that the passage of the fluid is not impeded in any way through the tube, employing a blunt probe to ascertain the cause and to remove any obstruction; then, by means of a piece of very flexible tubing and a double-valve syringe, similar to that of a stomach-pump [an ordinary bivalve enema syringe might be employed for want of better—Ed.], draw away the effusion slowly, until, by distress, or a sense of dragging, distension, or pain, the lung gives warning that it has undergone as much expansion as it can endure with safety. Having then removed the instrument, the wound will be found to contract, and close so completely that no lint or dressing of any kind will afterwards be required.

* In a former paper in the same journal, new series, vol. xxiii, p. 348, Dr. Bowditch says—“It is evident that it will be wise to introduce the trocar as low down as possible, consistently with the safety of important organs within the chest or abdomen. The spot usually chosen by Dr. Wyman and myself is just under the lower angle of the scapula, between the seventh and eighth, or eighth and ninth ribs. This point is chosen, first, because it is easily reached; second, the muscles covering the thorax at this part are thin; third, the intercostal vessels are as small there as elsewhere—possibly they may be smaller. The intercostal space is sufficiently large to easily admit of the passage of the trocar. With a reasonable degree of caution in our diagnosis, and if, when penetrating low down, we raise the point of the instrument instead of depressing it, we shall avoid the diaphragm, liver, or spleen.” Further details and a drawing of the suction-pump may be found at the same place.

"It is wonderful to observe the effects produced by this operation, even upon the mind, which, like the lung, seems relieved from great oppression, and the patient, before quite weak, gets up and walks and talks and acts like a new being. The digestion becomes at once improved, and the strength is rapidly regained. The cough usually, however, augments during the first few days; the pulse retains its quickness; friction sounds occasionally become developed, and several months may elapse before the vesicular murmur becomes properly re-established. The amount of relief obtained bears no relation to the quantity of fluid removed, for I have found as much ensue from half a pint as from a quart.

"Surgeons generally have the idea that the entrance of air at an operation produces dangerous symptoms. I have never found this to be the case, even when, from the mismanagement of the syringe, it has been pumped into the chest; nor am I alone in this experience,—other operators, who have witnessed like accidents, corroborate the testimony, the only disagreeable effect being the oppression momentarily produced. I do not doubt, however, that air *frequently* introduced would prove injurious. Some surgeons hesitate to operate for fear of wounding the lung. My experience on the subject is, that the puncture of any portion of the lung that can be reached with this small instrument, even if it were likely after auscultation, is but of trivial moment, compared to the great benefit to be derived from drawing off the effusion. I have once punctured the lung; Dr. Wyman confesses to a similar accident; and I have witnessed a third surgeon not only injure it with the trocar, but work the suction-pump whilst the canula was in its substance; notwithstanding, all these patients got well as usual, although bloody sputa were occasioned in one of them.

"I do not pretend that this operation will cure every case in which it is employed, but feel confident that in my hands it has been the means of saving many lives; and I believe that several patients within my knowledge, who have died whilst under the care of other physicians, might have recovered had it been had recourse to. It is comparatively harmless, and gives but little pain, and, in my opinion, ought never to be allowed to fall into disuse by the profession. It was in my earlier years of practice that I first noticed and endeavoured to prevent sudden death from pleuritic effusion, meeting with but indifferent success, owing to the imperfect state of surgery at the time, when my attention was drawn to Dr. Wyman's mode of operating by means of a small trocar and suction-pump, which I at once adopted as the means I had so long sought after. Modifying his plan, however, I employed a flexible tube with the canula, that it might not be disturbed whilst I was drawing off the fluid. I have employed this instrument ever since, and the result is the experience here given. I consider the operation so simple, that I would as soon perform it as draw a tooth or vaccinate a child."

R. H. Powell, on thoracentesis in serous effusion ('Lanc.,' 1862, ii, 384). A. Biermer, on paracentesis in traumatic pneumothorax ('Schweiz. Zeitschr.,' ii, 152). Prof. Symanowski, on partial excision of the sternum ('Deutsche Klin.,' 1863, p. 306). M. Trélat, fistula after a wound ('Gaz. d. Hôp.,' 1863, p. 438).

Mamma.—Prof. Schuh, on cancer ('Spit. Zeit.,' 1862, pp. 27, &c.). M. Nélaton, adenoid ('Gaz. des Hôp.' 1862, p. 554). M. Demarquay, tumour of butyrous appearance (ib., 1863, p. 17).

ABDOMEN.

A. Poland, a collection of cases of foreign bodies in the stomach and the intestines ('Guy's Hosp. Rep.,' 3rd ser., vol. ix, p. 269).—The symptoms of a foreign body *in the stomach* are very various, and depend in a great measure on differences in the size, form, and irregularity of surface. In many cases it may be retained without inconvenience, or pass through the bowels without pain or trouble. But in general there is a sense of uneasiness and pain in the stomach, and if the body be large or heavy it may produce a feeling of weight and fulness. After a time, vomiting, hæmatemesis, and dyspepsia, are wont to ensue. If the foreign body is composed of iron, or of other material soluble in the gastric juice, more or less of it will pass off with, and sometimes greatly discolour, the motions. The diagnosis may be presumptive or direct; the former from the actual swallowing of the substance, the immediate sense of suffering in the stomach, the subsequent pain in the same region, vomiting, hæmatemesis, and discoloured stools; but the latter only can be fully satisfactory. In many cases, however, it is quite impossible to detect a foreign body in the stomach by even the most careful manipulation, especially where the parietes are thick; even where a body is felt, it may be impossible to determine whether it is in the stomach or the arch of the colon.

Course.—(1) Foreign bodies may be vomited up.

(2) They may escape into the intestines, and pass off with the fæces.

(3) They may, as in the case of pin-swallowing, traverse the organ, and appear at different parts of the body.

(4) They may remain quiescent in the stomach for a long period, and the patient die of other causes.

(5) They may cause gastritis, indigestion, slow emaciation, exhaustion, and death.

(6) They may induce adhesion of the stomach to the abdominal parietes, followed by ulceration and the formation of a fistulous aperture.

(7) After inducing ulceration, they may perforate the peritoneum, producing violent inflammation and death.

(8) They may at once, from their sharpness, perforate the stomach, inducing collapse and rapid peritonitis, such as is observed in rupture of the viscera.

In 39 cases, there were 12 deaths and 27 recoveries. Of the 12 deaths, 5 were from perforation, 5 from exhaustion, 1 from obstruction, and 1 from suicide, owing to the intensity of the pain. Of the 27 recoveries, the foreign body was vomited up in 2, in 1 the pins passed out at different parts of the body, in 1 the body remained quiescent in the stomach, in 14 it was passed per anum, and in 5 gastrotomy was performed.

Treatment.—According to Mr. Pollock, the swindler in the streets who, to avoid conviction, swallows a piece of false money, adopts a peculiar treatment. He avoids purgative medicine as worse than useless; on the other hand, he has recourse to a constipating diet, and feeds for some days on hard-boiled eggs and cheese, in excess beyond his usual diet. Oily, mucilaginous drinks may be given; all complications, such as gastritis or vomiting, must be combated by the usual remedies. Mr. Poland is of opinion that gastrotomy cannot at present be recommended, and that it was probably superfluous in the cases where it has been performed, the foreign body being capable of natural expulsion.

Professor Adelman is not quite of the same opinion as Mr. Poland. In a lengthy paper, principally devoted to internal obstruction of the small intestines ('Prag. Viertelj.,' 1863, ii, 29), he gives a table of nine cases in which the stomach was opened for the removal of foreign bodies, according to which death only once ensued. On the other hand, it is advisable to delay any operative proceedings as much as possible till the stomach or intestine has united to the abdominal wall. Monro's proposition, to favour such union by exciting a circumscribed inflammation of the abdominal wall by means of caustics, has been employed with success in cysts of the liver.

R. Billroth, extraction of a needle from the abdomen ('Schweiz. Zeitschr.,' i, 52). Dr. Legendre, on accidental anus ('Mém. de la Soc. de Chir.,' v, 227). Prof. Oppolzer, on traumatic peritonitis ('Spit. Zeit.,' 1863, pp. 25, 41). W. Gruber, abscess in cavum præperitoneale ('St. Petersb. Med. Zeitschr.,' iii, 151, 366). M. Blanchet, on catheterism of the duodenum, &c. ('Gaz. Hebdom.,' 1863, p. 555). J. C. Cameron, on the treatment of abscess of the liver ('Lanc.,' 1863, i, 631). M. Trousseau, on repeated acupuncture as a means of causing union between the walls of the abdomen and cysts ('Gaz. des Hôp.,' 1863, p. 537), and on hydatids ('Spit. Zeit.,' 1863, pp. 45, 53).

HERNIA.

E. Coulson speaks strongly in favour of the *operation for strangulated hernia without opening the sac* ('Arch. Gén.,' 1863, i, 273, &c.). Among other advantages of this method of operating, he notes that the intestine is less liable to be wounded, and that if any artery is opened, the blood flows outwards and cannot escape into the peritoneal cavity; the hæmorrhage is at once perceived, and a ligature can be readily applied, if the incision is somewhat prolonged.

In the operation it is sometimes difficult to recognise with certainty the sac. The surgeon will do well to remember that it is not continuous with the margins of the ring, as are the other layers. By passing the finger round the pedicle, some more yielding spot may generally be found; it is there that the bistoury should be passed. The stricture having been divided, great care must be used in the reduction not to rupture the sac, or otherwise injure the bowel. The taxis should be continued for some time, the index finger of the left hand being applied to the neck of the tumour, so that reduction may not take place *en masse*, as is so liable to occur when the ring is large and the strangu-

lation due to the neck of the sac. Gurgling does not always accompany the return of the bowel, but the relaxation of the tumour, and the possibility of feeling with the finger and through the sac the aperture into the abdomen are sufficient proofs.

An objection to this method has been drawn from the occasional seat of the stricture in the neck of the sac. Dupuytren declared in 1818 that six times out of nine, strangulation was caused by the neck of the sac. Not much later, A. Bérard raised the proportion to eight out of nine; and ultimately Malgaigne maintained in 1840 that genuine strangulation was always caused by the neck, and that the cases of supposed strangulation by the rings were cases of inflammation of the hernial sac. The author has found that strangulation of a hernia by the neck of the sac is not a frequent obstacle to reduction, either because such a form of strangulation is rarer than supposed, or because the resistance of the neck is not so great as to require incision; thus, in his sixth case, where the neck of the sac was very hard and contracted, reduction was effected by moderate pressure on the sac for eight or ten minutes. Such a condition of the neck of the sac may be expected when a hernia comes down after the long-continued use of a truss. Its most certain character is the continued hardness of the pedicle after division of the fibrous rings.

The author recommends that, when the rupture is very large, when the symptoms are those of inflammation of the sac rather than of genuine strangulation, when the bowel is adherent, or when there is some reason to suspect gangrene, the intestine should not be reduced; the case should, however, be very carefully watched, so that the sac may be opened, if at any time it appears absolutely necessary.

C. Holthouse, clinical lecture on the diagnosis of hernial and other tumours of the groin and scrotum ('Med. Times and Gaz.,' 1863, i, 129, 286).—"A man, æt. 47, was lately admitted with strangulated hernia, supposed to be inguinal. A tumour of an oblong form occupied the left inguinal region; its long axis was parallel with Poupart's ligament, and it projected a little above this structure. It differed, however, from an inguinal hernia in the following important particulars:—(1) Its outline was more defined; (2) it was more prominent; (3) it was more superficial. An inguinal hernia in this situation must have been wholly or in part within the inguinal canal, and therefore beneath the aponeurosis of the external oblique, which, owing to its unyielding nature, would have prevented such a prominence and such a definition of the tumour as was here apparent; but the decisive test for determining whether it were an inguinal or a femoral hernia consisted in carrying the finger into the inguinal canal. This you saw me do; invaginating a portion of the skin of the scrotum on the end of my forefinger, I passed it into the inguinal canal, and found this passage free, and the tumour lying in front of my finger. There could be no doubt, then, that this was a femoral hernia. The taxis having failed to return the hernia, the usual operation was performed, and the patient left the hospital well a few days ago."

Mr. Holthouse classes the swellings which bear some resemblance to hernia under two heads:—(1) Those situated in the neighbourhood of

the groin, including the region immediately above and below Poupart's ligament; and (2) those met with in the scrotum or labium. Among the tumours in the former situation may be enumerated enlarged glands, abscesses, imperfectly descended testis, hydrocele and hæmatocele of the cord, adipose tumour of the cord, the fibrous tumour of the iliac fossa of Nélaton, occurring only in females, aneurism, and dislocation of the femur upon the pubes. The tumours in the scrotum or labium are hydrocele, common and encysted, hæmatocele, varicocele, sarcocele, and other tumours of the testis or cord; and in the female, cysts and chronic abscesses of or in the labium. He explains and illustrates by cases the differential diagnosis of these affections, very justly laying stress on percussion, as a means of extreme value in the determination of some difficult cases. "Hydrocele of the cord, whether encysted or diffused, bears some resemblance to hernia: a movable tumour, circumscribed in the one case, diffused in the other, occupies the inguinal canal, and, perhaps, the upper part of the scrotum, and can be pushed towards the abdominal and scrotal cavities, but not completely into them, as, indeed, is the case with an irreducible bubonocoele. The difference consists in this—the hydrocele is fluctuating to the touch and dull on percussion, whilst the hernia is either elastic to the feel, resonant on percussion, and has a distinct impulse communicated to it on coughing, in which case it is intestine; or it is neither elastic, resonant, nor fluctuating, but doughy to the feel, in which case it is omentum. The chief points in which a hæmatocele of the cord differs from a hydrocele of the same part are—(1) the mode of its occurrence, coming on suddenly after violent exertion or a blow on the part; (2) the occasional presence of ecchymosis; and (3) the indistinctness of the fluctuation."

Mr. Holthouse gives a very necessary caution against being in too great haste to operate, even in cases of undoubted hernia. "I was called up by a surgeon a few nights ago to see a case of strangulated hernia, and was requested to bring my instruments with me, as he thought there was no time to be lost. I found a tolerably large scrotal rupture; it was tense and somewhat sensitive to handling, and attended with a sensation of dragging in the abdomen. The patient had been the subject of hernia for many years, but had always been able to reduce it till about fourteen hours before I saw him. From this time all the efforts both of himself and his surgeon had proved unavailing. I put him under chloroform, and tried the taxis for about fifteen minutes, but was not successful in returning the rupture. I declined, however, to operate, because there were really no symptoms of strangulation present; the hernia was for the time irreducible, but it was not strangulated. A pill of two grains of opium was therefore prescribed, and ice was directed to be applied to the tumour. Before eight o'clock the next morning the hernia had gone back of its own accord."

M. Nélaton, clinical lecture on a case of strangulated femoral hernia ('Gaz. d. Hôp.,' 1862, p. 166).—Yesterday morning there was admitted a woman of 56, who for a dozen years has had a femoral hernia on the right side, imperfectly supported by a bad truss. This rupture escaped from time to time, but returned readily. Nine days ago it made its appearance of larger size than usual, and could not be reduced

by the patient; she was immediately attacked with abdominal pains, constipation, nausea, and vomiting. The matters vomited were of a greenish colour, and had not the smell of intestinal fluids; such are simple bilious vomitings, and occur in inflammations of the abdomen; they are composed of a transparent, colourless fluid, which contains, as a precipitate, a layer of greenish-coloured mucus. The vomiting was accompanied by a complete stoppage of the bowels, by a tense and tympanitic state of the belly, so that the intestinal coils could be seen through the walls of the abdomen. Every part of the belly, but especially the supra- and infra-umbilical regions, became painful. Such were the local symptoms presented by our patient. We also found a notable alteration in the countenance; a slate colour of the face, which might be compared to the cyanotic hue in cholera, an appearance of the same kind on the back of the hands, and a slight diminution in the temperature; the latter change could be most readily perceived in the extremities, at the end of the nose, the fingers, or the tongue, where the quantity of arterial blood is not sufficient to keep the temperature as high as in more central parts. This is a bad sign,—it shows us that the hæmotosis is imperfect, and that the process of calorification is not following its regular course. She also complained of pains in the groin, where there was a swelling of the size of a little orange. This swelling, which was diagnosed as a femoral hernia, presented some peculiarities as to its position. It appeared to be placed above the inguino-crural fold, and to rest rather on the abdominal wall than on the thigh; it seemed even to pass to some extent into the greater labium of the same side, just as an inguinal hernia. On the other hand, there were reasons for believing the hernia to be femoral. Thus, to arrive at an exact determination of the nature of the tumour, it became necessary to analyse the symptoms which we have described, and to fix with precision the position of the hernia, which seemed, as we have mentioned, to encroach on the abdominal wall.

M. Nivet, an old *interne* of the Hôtel Dieu, has established, that in the diagnosis of a hernia the points to be determined—the veritable landmarks—are the bones, the fixed parts of the pelvis, and not the external soft parts. In fact, in oldish persons, especially if they have been stout when young, as our patient, the soft parts at the lower part of the abdomen become lax and pendulous; the *mons veneris* is, so to say, prolapsed forwards and downwards, and becomes located lower than the symphysis pubis. In our case the symphysis is placed very much higher than would be supposed from simply examining the position of the *mons veneris* and of the hairs; the latter, indeed, are much below the brim of the true pelvis. When, however, we carefully marked by palpation the pubic symphysis, and drew a line from the anterior superior spine of the ilium to the spine of the pubis, we saw clearly that the hernia was placed below it. In short, you must always determine the position of the pubic symphysis, and not let yourselves be led into error by depression of the *mons veneris*; you must see whether the tumour is above or below a line drawn from the anterior superior spinous process of the ilium to that of the pubis. It is of great importance to call the surgeon's attention to the errors of diagnosis which may arise

from the soft parts of the abdomen changing their relative position to the bones. Thus, in puncture of the bladder, if you trust to the outward appearance of the soft parts, you may fancy yourself above the symphysis, when, owing to the low position of the *mons veneris*, you are below. Unless you search for the upper margin of the pubis with the finger, you will be liable to fall into this error, and to puncture below the symphysis. M. Nélaton saw this occur in the days of June. A young non-commissioned officer was struck by a ball in the upper part of the thigh; it passed obliquely through the perinæum, and escaped by the opposite gluteal region. The young man was tormented with complete retention of urine. M. Nélaton saw him, and after examination, directed the *interne* to puncture the bladder. The latter was deceived by the sinking of the soft parts in the hypogastric region; fancying he was above, when he was really below the symphysis, he punctured, and, as you may readily imagine, no urine flowed. M. Nélaton saw another example of this error in the case of an old man of eighty-two; he had for many years been very stout, and thus the tissues in the pubic region had become so depressed and flaccid, that the puncture was made below the symphysis.

Another symptom, which seemed somewhat incompatible with our diagnosis, was the form of the swelling. It was not globular or shaped like a chestnut (*marronnée*), as is usually the case with a femoral rupture; it was not reflected upwards and outwards, as the latter so often is; on the other hand, it formed a swelling obliquely downwards and inwards, and simulated to a certain degree, as we have already said, an inguinal hernia.

There is a symptom which is generally well marked, and which is of great service in a doubtful case of hernia; this symptom, which is in practice too much neglected, and which yet is really of importance, is drawn from the point of attachment of the prolapsed bowel to the rest of the viscera contained in the abdomen. The point of union is the pedicle of the hernia; it may, as in the present case, be felt through the parietes of the abdomen in the form of a rounded, cylindrical cord. Although the belly was much distended in our patient, we could feel this cord, and trace it to the hernial ring. The general condition of the woman was bad; the strangulation was of nine days' duration; the pulse was small; there was some cyanosis; the abdomen was distended with gas; she had incessant vomiting; the pains extended over the whole abdomen. These were symptoms of advanced peritonitis. What ought to be the surgeon's conduct in such a case? Should he wait for death? We thought not; there was still a faint shadow of hope; we operated. The operation was performed three quarters of an hour after the patient's admission into the hospital. It was tolerably simple—an incision through the skin and subcutaneous cellular tissue; as we proceeded, we saw a sero-sanguineous fluid, somewhat resembling that contained in the sac, escape at each incision with the bistoury. The presence of this fluid was owing to the strangulation having existed for a considerable period; it might possibly have given rise to the belief that the sac had been opened, all the more because, after dividing the subcutaneous tissues, layer by layer, a rounded mass, much

resembling omentum, came into view. As, however, it did not present the bluish-gray colour characteristic of the hernial sac, it was incised, two other layers were divided, and the sac was exposed. It is very difficult to give in words any idea of the appearance of the latter; it must be seen. It does not differ from the outer layers by its slightly yellow and marbled colour, as has been asserted, but rather by its being of a uniform bluish-gray; it most closely resembles in hue a vein seen through a very delicate skin, or some darkish body seen through a translucent substance. It was punctured; a slightly viscous and bloody fluid escaped, and the aperture was enlarged upwards and downwards. The sac contained omentum, which was placed, as is always the case, in front of the intestine, and which adhered partially to the walls of the sac. We then met with some difficulty, owing to the depth to which the pedicle penetrated. The sac was drawn forwards, and one side of it was held by an assistant; we then took hold of the other, and divided as far as we could with scissors. By such a proceeding we may occasionally succeed in relieving the strangulation; in the present case we were obliged to divide the stricture with a curved bistoury, to the extent of not more than two or three millimetres, and we then convinced ourselves, by passing the finger, that the dilatation was sufficient; if, in such a case, the index finger will pass through the aperture, you may be sure that the bowel will pass. Reduction was readily performed.

It will be advisable to remark on some portions of this operation. The escape of a sero-sanguineous fluid, as the various layers are successively divided, is a sign that the taxis has been tried quite long enough. Such a discharge may occasion errors in diagnosis, which may be followed by hasty treatment on the part of the surgeon; indeed, it may induce a belief that the sac is opened, the more because, after incising the supposed sac, a distinct and perfectly separate sphere is found, as in our patient. If reduction is then performed, both the hernia and the sac will be returned without relief to the strangulation, the only difference being that the seat of strangulation will be in the abdomen instead of externally.

The loop of intestine was carefully examined; it was drawn further out, so that we might satisfy ourselves of its integrity at the point of constriction. Occasionally, as you may remember, a little ulceration is found to correspond to the seat of stricture; here it had not occurred, because the omentum had completely surrounded and protected the bowel at that point; thus the gut was not immediately compressed, and had escaped in part the effect of strangulation.

There has been much dispute as to the anatomical characters of intestinal gangrene; it has been said that the bowel is of a brown colour, somewhat like that of a withered leaf. M. Nélaton, after the examination of a great number of strangulated herniæ, has come to the following conclusion:—That the loop of bowel having been drawn down and the point of constriction carefully examined, if a portion is gangrenous or sloughing, it will be found to be macerated and impregnated with the intestinal fluid; *it will then be of the same colour as the intestinal contents.* This is the matter which colours the gan-

grenous portion; you may now readily understand the comparison with the colour of a dead leaf. After the operation M. Nélaton did not follow his usual custom of prescribing a purgative; the patient had, however, four full evacuations. An immense blister, covering the whole of the abdomen, was ordered. It must be remembered that at the time of the operation the patient presented the symptoms of general peritonitis; now it is known that blistering is of service in serous inflammations; it is thus used in pleurisy, and there appears to be no reason why it should not be used also in peritonitis—both membranes are of the same nature, and both are subject to similar inflammations. M. Nélaton has twice employed this method of treatment with success in his private practice. One case was that of a young man who was operated for hernia, and who presented symptoms of acute peritonitis; he perfectly recovered after the application of a large blister.

To-day—yesterday the operation was performed—the patient is no worse; she is perhaps a little better; she complains less of her belly, although the pains are deep-seated. She frequently complains of being unable to make water—a result, perhaps, of the blister; she has been relieved by the use of the catheter. The pulse is by no means bad; it is of tolerable size, and beats 108 or 110 times in the minute. An unfavorable symptom is the violent thirst; it is a sign of serious peritoneal inflammation. The expression of countenance still continues, though less marked. The nose is not so violet and cold as yesterday. This morning, when the hernia was examined, it was seen that the edges of the skin had almost entirely united, and that there was considerable swelling, so much, indeed, that the rupture might be supposed to have again escaped, a circumstance, which, by-the-bye, would not add much to the danger. We considered that the swelling was owing to the effusion of bloody serum. We immediately separated the lips of the wound, and allowed a large quantity of such fluid, mixed with bubbles of gas, to escape. The reproduction of this fluid in the hernial sac may be observed every day. It may, unless allowed to discharge externally, infiltrate the walls of the abdomen, and pass upwards to the back of the trunk, determining terrible attacks of diffuse phlegmon. This liquid, which is effused by an inflammable peritoneal sac, is more deleterious than even urine; both produce gangrene of the infiltrated tissues and frightful ravages. We therefore hastened, in our case, to evacuate the promiscuous fluid, which might give rise to—(1) the acutest peritonitis, if it passed into the abdominal cavity; and (2) infiltration of the superficial layers of the perinæum, followed by diffuse phlegmon.

The patient died two days later; the post-mortem showed general peritonitis.

Mr. Wood, on ruptures, inguinal, crural, &c. (Lond., Davies). C. W. Streubel, summary of recent publications ('Schmidt's Jahrb.,' vol. 118, p. 81). C. Vines, on the treatment of congenital hernia ('Lanc.,' 1862, ii, 699). Mr. Jordan, on inversion ('Med. Tim. and Gaz.,' 1862, i, 609). M. Philipeaux, on cauterization of the omentum after the operation ('Gaz. d. Hôp.,' 1862, p. 365). Dr. Sayre, on cutting at once to the sac ('Amer. Med. Tim.,' 1862, ii, 192). Cases of inflamed sac

(*Schweiz. Zeitschr.*, ii. 56, 57, 58). L. Rupprecht, on the result of operations for hernia (*Wien. Med. Wochenschr.*, 1863, pp. 547, &c.). Messrs. Wood, Davies, and Colles, on the radical cure (*Med. Tim. and Gaz.*, 1862, ii, 326; *Dubl. Quart. Journ.*, vol. xxxiii, pp. 60, 243).

Inguinal Hernia.—J. Paget, on congenital, &c. (*Brit. Med. Journ.*, 1863, i, 88). W. Busch, rare case (*Arch. f. Klin. Chir.*, iv, 47). Mr. Bradford, case of operation, in which both the testicle and sac were above Poupart's ligament (*Glasg. Med. Journ.*, ix, 492.) M. Fano, unusual course of an inguinal hernia (*Brit. Med. Journ.*, 1862, i, 256).

Femoral Hernia.—G. W. Callender, anatomy of the parts concerned in femoral rupture (Lond., 1863). P. G. Hewett (*Brit. Med. Journ.*, 1863, i, 131). Mr. Harper, operation on a woman of ninety-five (*Lanc.*, 1862, i, 34). Case under Mr. Skey, in which the gall-bladder was contained in the sac (*Med. Tim. and Gaz.*, 1862, i, 296). Case in which the ovary was in the sac (*Schweiz. Zeitschr.*, ii, 50).

Obturator Hernia.—Drs. Ulrich and Wilms, four cases of operation (*Deutsche Klin.*, 1862, pp. 105, 107). W. Coulson (*Lanc.*, 1863, ii, 303).

Umbilical Hernia.—M. Debout, on congenital (*Dubl. Quart. Journ.*, vol. xxxv, p. 98). J. Moor (*Schweiz. Zeitschr.*, 1863, p. 256). H. Moore, stomach strangulated (*Brit. Med. Journ.*, 1863, ii, 218). M. Huguier and others, on the operation (*Gaz. Hebdom.*, 1862, pp. 754, 845). Mr. Steele, operation for strangulated congenital umbilical hernia (*Brit. Med. Journ.*, 1862, i, 127). Mr. Barwell, on a new operation for the radical cure (*Lanc.*, 1861, ii, 419, 471). Dr. Watson, on the radical cure of exomphalos in the adult (*Edinb. Med. Journ.*, viii, 236, 276). M. Chicoyne, on the radical cure (*Gaz. d. Hôp.*, 1863, p. 20).

H. Walter, congenital *sciatic* hernia (*Arch. f. pathol. Anat.*, vol. xxvii, p. 212). Dr. Chapplain, lumbar hernia (*Arch. Gén.*, 1861, ii, 739).

INTESTINAL OBSTRUCTION.

Prof. Adelman discusses, in the paper already quoted, the symptoms and treatment of mechanical obstruction of the small intestines. He considers that the history of the case, the suddenness of the attack, the frequent recurrence of the symptoms, or their supervention after the reduction of an external hernia, are but very uncertain signs of any particular form of strangulation. He calls attention to the serous exudation which often rapidly appears in acute internal strangulation, and relates a case where a very large amount of reddish serum was found; the bowel was strangulated in an abnormal aperture in the mesentery, and death had occurred forty-eight hours after the commencement of the disease. He considers the gurgling sound, which is often heard, a favorable symptom, as showing that the peristaltic motion of the bowel is still active. He quotes cases in which this affection has been confounded with strangulated hernia, with reducible hernia, with peritonitis, with biliary and renal colic, with poisoning,

with cholera, and with circumscribed pneumothorax. From the tabular view of 33 cases of laparotomy, it appears that—

The indication for the operation was

	Cases.	Of these cases there recovered	There died
Volvulus	in 4	2	2
Continuance of the strangulation after the reduction of a hernia	7	5	2
Invagination	5	2	3
Foreign bodies	3	2	1
Prolapsus of small intestine through a rupture of the rectum	2	0	2
Bands	8	2	6
Tumours and hypertrophy	4	2	2

Fifteen cases were correctly diagnosed; in 17 cases there was really no diagnosis made. The shortest time after the occurrence of the symptoms, at which the operation was performed, was 16 hours, the longest 30 days, and the average of 22 cases 53 hours.

The table of 31 cases of enterotomy for internal obstruction (excluding cases of Callisen's operation, and those in which it was performed in infants) shows that 13 recovered and 17 died.

The duration of the obstruction was—

In the cases of deaths				In the cases of recovery			
2 days	.	.	1	5 hours	.	.	1
7 "	.	.	2	2 days	.	.	1
8 "	.	.	1	8 "	.	.	1
9 "	.	.	1	9 "	.	.	1
12 "	.	.	1	10 "	.	.	1
13 "	.	.	2	12 "	.	.	1
18 "	.	.	1	13 "	.	.	2
20 "	.	.	1	82 "	.	.	1
30 "	.	.	1				

An account is given of a number of experiments, which were made for the purpose of tracing the effect of connecting various parts of the small with the large intestine; the small intestine was divided, the two ends were placed parallel to one another, fixed for about an inch distance with sutures, and then introduced into the large intestine.

A. P. Duchaussoy has published an elaborate essay ('Mém. de l'Acad. de Méd.,' vol. xxiv, p. 97), founded on 518 observations, in which the anatomical changes are accurately described, and 120 in which there was no post-mortem examination.

A.—STRANGULATION OF THE MESENTERY.

There were only three cases of this kind in which the bowel was probably not implicated; in one case death occurred in forty-eight, in another in thirty-four, hours.

B.—STRANGULATION OF THE INTESTINE.

Causes seated in the bowel itself.

I. *Invaginations.*—Excluding those which so often occur in young children during the agony, they may be divided into central and lateral:

the former amount to 135 cases; the latter, in which only one wall is invaginated, are extremely rare (2 cases). Out of the 135 cases the age is mentioned in 100; there were 37 children (31 under four years, 6 from four to ten years) and 63 adults (49 men, 14 women); from which it results that invagination is relatively most frequent during the first four years of life. In 61 cases the commencement of the disease is stated; in 34 of which 27 were young children, the affection suddenly occurred whilst the general health was good; in 27 of which only 4 were children, it was preceded by other symptoms, as pain, constipation, prolapsus of the rectum.

a. Simple descending invaginations.—92 cases, or 35 in which only the small intestine, 25 in which only the large intestine, and 31 in which both, were invaginated. It must be noted, however, that in all the children, except four, either the large intestine alone or both large and small intestine formed the intussusception.

The invagination was seated in—

The rectum, and projecting through the anus	11 times.
„ rectum alone	6 „
„ sigmoid flexure and rectum	11 „
„ sigmoid flexure alone	6 „
„ descending colon	7 „
„ transverse „	7 „
„ ascending „	9 „
Both the transverse and descending colon	3 „
The end of the descending colon and beginning of the sigmoid flexure	2 „
The transverse, the descending colon, and the rectum	1 „
The ascending and the transverse colon	1 „

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The left portion of the large intestine contained the intussusception 41 times, the transverse portion only 7 times, and the right portion 9 times; the tumour must, accordingly, be especially looked for in the left portion of the large intestine. The author finds that gangrene, perforation, and rupture, do not occur in the simple intussusception of adults till the strangulation has lasted at least twelve days, and sometimes not for one to two months.

b. Ascending intussusceptions (16 cases) always appear as a complication of some other affection.

The author has also collected 14 cases in which an intussusception appeared as a complication of such diseases as polypus or cancer of the rectum; 8 cases in which an intussusception was again invaginated, so as to be composed of five cylinders, and 1 case in which it was composed of seven cylinders; 65 cases in which the invaginated portion of bowel was eliminated (in 7 of these, contraction of the bowels followed).

Of the whole 135 cases, 97 died and 38 recovered from the immediate effects of the strangulation; of the latter, however, 9 died, either directly in consequence of the elimination of the eschar or from the morbid condition of the intestine; the further course of most of the other cases is unknown.

Diagnosis.—A tumour always exists, and is usually seated in the

large intestine; it is especially to be sought for in the middle and lower parts of the left side of the abdomen, by palpation, by examination with the finger or a bougie introduced per anum, and by percussion. The diagnosis is facilitated in the period of elimination by the symptoms of enteritis, by the bloody discharge, and by the sloughs.

Treatment.—Reduction may be attempted by the fingers, by a bougie, by insufflation of air, or the injection of water, before sloughing has commenced. Purgatives and fluid mercury are decidedly injurious. Antiphlogistics and narcotics are often of great service. During the second stage, when the slough is forming, little can be done but to watch the case. The author considers it justifiable to puncture the intestine with a trocar, or even to perform enterotomy, for the purpose of allowing an escape for gas and fluids. The greatest care must be taken during the third period, when the slough is being eliminated, not to break up the adhesions.

II. *Twists of the intestine, either on its own axis or round another piece of bowel.*—The author has collected 21 cases, in 8 of which the small, and in 12 the large intestine was the part affected; in 10 cases it was on the right, in 7 on the left side, and in 3 near the middle; peritonitis occurred in almost every case. They must be treated in the same manner as intussusceptions.

III. *Strictures.*—Twenty-eight cases of cancer, in no case affecting the small bowel. 2. Twelve cases from hypertrophy of the submucous, muscular, and cellular tissues, of which almost all were in the rectum or sigmoid flexure. 3. From cicatrices or inflammation there were 16 cases, mostly seated in the small intestine; death ensued ten times from peritonitis, six times from perforation. 4. From valves; rarely observed in adults.

Of 8 cases of enterotomy in the inguinal region only 1 recovered; of 7 in the lumbar region all recovered; one case of gastrotomy was also successful.

IV. *Polypi.*—Fourteen cases, generally complicated with intussusception.

V. *Agents not structurally connected with the intestine.*

1. *Fæces.*—Only 15 cases, in which no other cause could be found. The cæcum, sigmoid flexure, and the rectum, were the parts generally affected. These cases lasted for an extremely long period—3 months, 110, 114 days.

2. *Foreign bodies.*—Fourteen cases; the seat of the obstruction was in most cases the termination of the small intestine.

3. *Worms.*—Nine cases.

4. *Biliary calculi.*—Eighteen cases; and

5. *Intestinal calculi.*—Ten cases, generally in the large bowel.

Agents external to the intestine.

The author notes 16 cases of strangulation by the vermiform appendix, 21 cases by diverticula of the small intestine, 7 cases by the mesentery acting as a band, 7 cases by the omentum twisted like a cord. There were 65 cases of strangulation by bands or adhesions; the band

was placed, in 48 cases, thirty times on the right side, generally between the umbilicus and right iliac fossa, nine times on the left side, and nine times in the middle line. Out of 53 cases the large intestine was strangulated only four times, the small intestine forty-nine times. The duration was in 10 cases from eight hours to three days; from four to eight days in 15 cases (three operations); from nine to fourteen days in 8 cases (one operation); from fifteen to twenty days in 6 cases (three operations). The diagnosis of bands and adhesions may be to some extent aided by the fact, that almost all the cases of obstruction from adhesions have occurred in adult females, whilst by far the majority of those from bands were in males (from seven to eighty-five years old). Obstruction from adhesions must be treated just as that from faecal collections; that from bands by forced injections, fluid mercury, and perhaps drastic purgatives; an operation will, however, be generally required, and gastrotomy is to be preferred to enterotomy.

The author concludes with the consideration of cases of internal hernia, and of strangulation from the displacement of other viscera of the abdomen, such as the spleen, or from abdominal tumours.

A. P. Duchaussoy, on obstruction caused by biliary calculi ('Gaz. Hebdomadaire,' 1863, p. 700). Dr. Johnson and Mr. Fergusson, operation ('Med. Tim. and Gaz.,' 1862, ii, 435). W. Gruber, on strangulation by a knot formed of the last part of the ileum and the sigmoid flexure ('Arch. f. Path. Anat.,' xxvi, 377). W. Brinton, on an anomalous intussusception ('Lancet,' 1863, i, 409). J. Gay, on invagination (abstracted in 'Lond. Med. Rev.,' iii, 387). Dr. Scholz, abdominal section ('Deutsche Klin.,' 1863, p. 21). von Thaden, colotomy according to Fine ('Arch. f. Klin. Chir.,' iv, 154). M. Bosia, on intussusception in infants, with a case cured by catheterism ('Gaz. des Hôp.,' 1863, p. 502). Dr. Breisky, case of retroperitoneal hernia ('Wien. Med. Jahrb.,' 1863, i, Anal. 63).

RECTUM.

Malformations.—Mr. Bryant is of opinion ('Brit. Med. Journ.,' 1863, i, 391) that the inguinal or Littré's operation should be performed, when relief cannot be obtained by any operation in the anal region.

"We have next to determine whether the intestine should be opened in the left side, in which it was originally suggested, and has hitherto been practised; or whether it would not be a more certain and equally effectual operation to open the colon in the *right* groin. After carefully reviewing the chief facts connected with this subject, I believe that the best practice lies in the performance of this last suggestion, and my opinion is based upon the following reasons:—Firstly, the large intestine will to a certainty be found in the right iliac region, whilst in the left this certainty does not exist; this has been shown by Mr. Curling, even in normal subjects, in which no deformity exists. In two instances out of twenty, in which he practised this operation upon the dead child, the colon could not be found in its natural position, and on subsequent dissection it was found to be lying on the right side. In cases of maldevelopment there is strong reason to believe that this irregular position of the descending colon exists in a larger proportion

of cases, and that in such the terminal portion of the bowel will be found more frequently on the right side than in well-developed and well-formed children, or it may, perhaps, have assumed some median position. Under these circumstances the attempt to open it in the left groin would necessarily fail, and the life of the patient be probably sacrificed. It appears, therefore, to me to be a more certain and equally scientific practice to open the colon in the right groin; for if the descending colon pass in that direction it can be opened; and if otherwise, the cæcum can readily be secured; and, without doubt, under both circumstances, an equal relief will be afforded to the patient. The difficulties of the operation in the right or in the left groin are the same, and the certainty of finding the large intestine on the right than on the left is much greater."

Discussion ('Gaz. d. Hôp.,' 1862, p. 463, 1863, p. 16, &c.). H. F. Witt ('Diss. de atresia ani cong. anat. path.,' Kil., 1859) figures two cases; one in which the rectum ended in a narrow canal, which ran along the penis close to the urethra, and opened just behind the meatus; and a second, where it ended in a canal as large as, and opening into, the membranous urethra.

M. Bourcart, on the position of the sigmoid flexure of the colon in the infant ('Gaz. Hebdom.,' 1863, p. 705).

Diseases.—Mr. Bryant endeavoured to show in 1859, that hæmorrhage from the bowel is in children a very certain indication of the existence of a *polypus* ('Brit. Med. Journ.,' 1863, i, 499). "Since that date many similar cases have fallen under my care, and I must confess that it is a rare thing for me to meet with any instance of hæmorrhage from the bowel in children, which is not to be explained by the presence of such a growth. These growths are generally found in children under ten years of age. In some cases the discharge of blood from the bowel is constant, and the patient will be brought with its clothes stained and its buttocks smeared with a bloody mucus. In these instances the polypus will generally be found to be within, if not protruding from, the sphincter. In other examples occasional discharges of blood will be observed, although not to a great extent, and will generally accompany and follow the act of defæcation. In others, again, the hæmorrhage will take place independently of any such process. In a patient exhibiting any of these symptoms a careful local examination should be made. Much care is required in the examination, as the growth is readily passed by and overlooked. The best plan is to sweep the finger, passed well into the rectum, completely round the walls of the bowel. The polypus will thus be dragged from its attachment, and its pedicle will be made tense, thus arresting the attention of the examiner. By a careless examination it is almost sure to be overlooked, unless very large. When it is once detected, the cure is not difficult. The removal of the growth is the only correct treatment, and this may, in a large proportion of cases, be readily done by simply hooking the finger over the pedicle and breaking it off. I have never known any evil result from this practice, not even hæmorrhage, the process of lacerating the pedicle preventing this occurrence. In other instances the polypus may be brought out externally and ligatured. If the pedicle be thick,

and the polypus high up, it should be dragged down by means of forceps or by a wire noose, and then ligatured. The removal by the finger is the readiest and best practice, and it is the one which I have almost always followed. After the removal of the growth a cure may confidently be predicted; some care being always taken by the surgeon to satisfy himself that a second growth does not exist."

T. B. Curling, observations on the diseases of the rectum (3rd ed.). G. Passavant, dangerous injuries by clysters ('Deutsche Klin.,' 1862, p. 503; 1863, p. 3). M. Velpeau, ulceration at the margin of the anus ('Gaz. d. Hôp.,' 1863, p. 510). Syphilitic disease ('Deutsche Klin.,' 1862, p. 26; 'Lancet,' 1861, p. 420). H. Smith, prolapsus treated by the hæmorrhoidal clamp ('Lancet,' 1863, i, 578), and cases (ib., 1862, ii, 371, 592). J. B. Brown, operation for relaxed sphincter ani ('Brit. Med. Journ.,' 1862, i, 72). M. Demarquay, removal of a cancer ('Gaz. d. Hôp.,' 1862, p. 473).

GENITO-URINARY ORGANS.

Spermatorrhœa and Onanism.—Dr. T. Clemens states ('Deutsche Klin.,' 1862, p. 149, &c.) that hyperæsthesia of the urethral mucous membrane is a frequent cause of spermatorrhœa, even the passage of the urine being sufficient to cause an emission. Patients who suffer from this state of the urethra to a less degree are extremely subject to nocturnal emissions. The author has very often seen such a condition in married men. He has found washing with cold water, the sitz-bath, &c., of very little use. The hyperæsthesia may, however, be soon overcome by powerful electrical currents* passed from the perineum towards the glans, across the pelvis, through the rectum and penis; bougies, coated with a saturated solution of sulphate of iron in glycerine, may afterwards be used. The diet should be somewhat stimulating; red wine and coitus may be directed with advantage. As reasons for the use of electricity in such cases, he states that whilst misuse and excessive irritation of the genitals exhaust the spinal cord, the latter organ is strengthened and stimulated by such means as render the former stronger and better innervated; he has noticed such a reflex action of electricity in cases of onanism. The hyperæsthesia is *per se* sufficient to cause impotence, the semen being emitted on the slightest irritation, so that coitus becomes impossible.† The author has generally been able to trace the hyperæsthesia to affections of the spinal cord and onanism; he has also often found it accompanied by exactly the opposite state of the skin of the penis—anæsthesia. Instead of Lallemand's porte-caustique, he uses electrical shocks passed through an instrument, of which one pole is in the bladder, the other at the anus.

J. S. A. Dicenta states (ib., 1862, p. 441) that in 500 cases of spermatorrhœa he met with about 100 cases of some derangement of the digestive organs, generally constipation or dyspepsia, and about fifty

* The author generally uses the constant current or friction-electricity, and not faradization; the latter is often injurious, according to him.

† The author gives a description of an electrical girdle (ib., 1863, pp. 34, 57), for the prevention of nocturnal pollutions.

cases of hæmorrhoids. These morbid conditions appear to have a mutual reaction; the origin of the spermatorrhœa is generally to be found in earlier masturbation.

B. Schulz does not consider the frequent occurrence of emissions to be a morbid condition, unless they are unaccompanied by libidinous dreams or unattended by erections, because the laws of reflex action are the same during sleep and during waking. ('Wien. Med. Wochenschr.,' and 'Schmidt's Jahrb.,' vol. 114, p. 251). The induction current is of no use in spermatorrhœa; the constant current, on the other hand, is very beneficial when it is transmitted along the vertebral column for one or two minutes, and repeated three or four times a week. Twenty to thirty Daniell's elements, of medium size, should be used; the positive pole should be applied to about the fifth dorsal vertebra, and the negative to the sacrum or perinæum. This would appear to confirm the statement that the constant current diminishes the irritability of the spinal cord, and thus renders it less prone to the production of over-hasty reflex motions.

Mr. Hilton remarks ('Lancet,' 1863, ii, 123) that "regarding onanism and its treatment, surgeons are often consulted, and it is a very important matter. It is a habit very difficult to contend with in practice. I know of no way to prevent onanism except by freely blistering the penis, in order to make it raw and so sore that it cannot be touched without pain. This plan is sure to cure onanism. I have adopted this plan of treatment during more than twenty years. Gentlemen have come to me and said, 'I have for many years suffered from this abominable, disgusting habit, and I have tried to cure myself of it, but I cannot; for my morbid inclination overcomes my disgust when awake, and I think when asleep I am sometimes pursuing it. Can you offer any suggestion?' I have said, 'Paint this strong solution of iodine over the whole of the skin of the penis every night, and if that does not make the organ too sore for you to touch it, then apply in the same way a strong blistering fluid to the penis.' The result of my experience in practice has been that in almost every instance the continuance of the habit has been thus entirely prevented. Here is a case in relation to this subject—the notes are from the patient's surgeon:—'W. B—, æt. 15, is one of eight children, all of delicate constitution, and himself prone to convulsions in his infancy. After repeated exposure to cold and wet, he called upon his surgeon September 4th, 1860, complaining of pain in the sacrum and left hip and thigh. He was relieved by purgatives and salines. I saw him on September 11th, with both knees flexed, and complaining of great pain in the lower part of the sacrum, with so much tenderness as to be unable to sit down. The left thigh and leg were very tender, and there was excessive tenderness of the surface all down the spine. No local indications of heat in any of these parts; bowels constipated; tongue coated. He was ordered cathartic pills, colchicum, and an aperient mixture, in strong doses; croton oil and tartar emetic liniment to be rubbed along the dorsal and lumbar portion of the spine. Within a week there was great pain along the cervical portion of the spine, extending to the left arm. Says the motion of the shoulder is very painful; elbow free; left hand closed tightly, and any touch either of the

fingers or wrist caused him great pain. Slight pressure anywhere on the spine produced great pain, according to his own statement. September 19th.—Left hand firmly closed; both thighs drawn up; knees bent, and cannot be extended; toes of left foot inverted, and whole limb very sensitive. The mouth is closed for a few minutes two or three times a day. This went on till October 3rd, when a physician from London saw him. This gentleman, in consultation, thought that he recognised an important pathological state of the brain or spinal marrow, and pointed out with great precision the pathological anatomy which was sure to be found at the expected post-mortem examination. This prospect made the friends of the patient very anxious indeed. On October 7th he was no better; head symptoms were now added, and for a minute [or two he became unconscious. 11th.—No better; valerianate of zinc, with compound rhubarb pills, quinine, &c., were continued. 19th.—Consulted with the physician again; fits and trismus worse. He was ordered to have bichloride of mercury, iodide of potassium and bark.'

"30th.—As the patient was getting worse, I was requested to see him. I found him sitting in his chair, the left forearm flexed, with the left thumb turned inwards towards the palm of the hand, and the fingers flexed over it, his face flushing very readily. The skin was cool, and there was no thirst. The pulse was not quick, but the heart was very excitable; the tongue clean; the pupils dilated; the skin exquisitely sensitive to the touch when attention was directed to that point, but not when the mind was diverted from it. The contraction of the limb and hand was constant, but could be overcome by persevering efforts on my part, giving way very suddenly. The spine was tender the whole of the way down. I requested that he might be denuded. The penis was very sensitive, and the skin prolonged; the genital organs were cold, but highly sensitive; the hands were cold and damp. He had insisted on sleeping by himself, and in a room to himself. The patient watched especially my examination of the genitals, and when I at that moment looked at him seriously, averted his face, as if ashamed. I felt convinced that the whole of the symptoms were the result of onanism. On October 30th I insisted upon his not sleeping alone, so that he might not be able to continue his habit unobserved, and ordered five grains of mercurial ointment to be rubbed once a day into the axilla, so as to divert his mind from the thing I had in view, and I desired that a blistering fluid might be applied to the penis every night. In about three or four days the hands relaxed and opened, the legs remaining contracted; this contraction continued during sleep. The trismus persisted, but with longer periods of muscular relaxation. The local genital irritation was kept up, small doses of morphia were given at night, and the ointment used till the 20th of November. The mouth was a little sore, having been made so by the mercury. The ointment was then omitted, but the application to the penis was maintained.

"Nov. 23rd.—This is the surgeon's report:—'The fits,' &c., continued till to-day, and to-day the trismus lasted longer than at any former time. He suddenly opened his mouth, regained the use of his legs, and no relapse occurred. Subsequently a mixture of strychnia was given

twice a day.' I afterwards received this letter respecting the case from his surgeon:—'My dear Sir,—Young B— is and has been quite well; he is now in London. He was cured by the end of last November (one month from my visit). A slight gleet remained for months after; I did nothing for it but cold baths, &c. The application, I painted the whole penis well with, was the compound tincture of iodine, made stronger by ten or twelve grains of iodine to each ounce. "It touched him up well," I can tell you; but I don't think the friends ever had any idea what we considered the cause of his illness.' Here is a case, then, which I have placed upon the simple anatomy of the parts—viz., that the same nerves which supply the skin supply the mucous membrane and the muscular apparatus of the penis, and I have done so for the purpose of displaying its utility in practice. Not long after I had visited this young patient, a gentleman called upon me. When he came into my room, he said, 'You have performed a miracle, sir!' 'A miracle!' I said; 'you really take me by surprise. What do you mean?' 'Why, you have cured young B—; he is quite well, and at school. Dr. — said he would surely die from fits, resulting from some constitutional influences inherited from his father and mother.' I assured him that what I had done was no marvel; that I had simply acted upon common sense, experience, and physiological deduction. With that assurance and explanation he seemed to be satisfied, and so was I."

J. F. H. Albers, essay on spermatorrhœa (pp. 152, Bonn). J. L. Milton, on spermatorrhœa and its complications (6th ed.). M. Mallez, on the perineal douche ('Gaz. d. Hôp.,' 1861, p. 607).

Impotence.—B. Schulz considers the definition, that impotence is entire or partial loss of the power of erection in consequence of defective innervation, too narrow ('Wien. Med. Wochenschr.,' and 'Prag. Viertelj.,' 1862, i, Anal. 61). He treats the physiological sexual act as composed of three principal parts:

- (1) The sensual excitement or desire.
- (2) Erection, a reflex effect of desire.
- (3) Voluptuous ejaculation, whilst the penis is erect.

At the very commencement of the act, the sensual excitement is often such as to prevent all further functional activity—generally, indeed, from its being present to an excessive degree. Feelings of anxiety and shame soon appear, and many individuals then imagine themselves really impotent; mental depression and deterioration of health are the consequence. Such cases of psychical or hypochondriacal impotence are not to be treated by electricity; all that is necessary is to give the patient confidence.

In respect to the second point, he admits, in accordance with the usual view, that there is a close relation of the medulla oblongata to the genitals, and that the former may be excited either by the will, or by peripheral nervous irritation, a fact which will explain how erection may be excited either by mental impressions or by irritation of the glans or fossa navicularis, by fulness of the bladder, of the rectum, or even of the seminal vesicles. Yet though an erection is always the effect of reflex action, there must also be some other conditions, such as

the normal action of certain muscles and a normal sensibility of the glans; from which it results, that an imperfect erection may occur, or there may be even no erection at all, when (1) the sensual excitement is abnormally increased or diminished, and (2) when the sensibility of the glans or the reflex action of the m. bulbo-cavernosus is abnormal. The author has met with such cases of impotence, one side of the penis, and generally the left one, being too much or too little sensitive to electrical irritation of the skin, and the m. bulbo-cavernosus contracting irregularly. Anæsthesia causes paresis, hyperæsthesia spasm, of the bulbo-cavernosus; both these conditions may be readily diagnosed by the use of the electrical pencil. Diminished reflex action—paresis—is much more common in practice than spasm; thus the author observed the latter only in twenty-four out of eighty-three cases. As a typical example of the hyperæsthetic form of impotence, he relates the case of a robust man, aged thirty-six, who had masturbated from his fifteenth or sixteenth year, and who had attempted coitus shortly afterwards without success, owing to a dragging sensation in the penis and perinæum. From that time the same sensation had recurred at night, and an emission without erection occurred on any attempt at coitus. The urethra was so sensitive that a bougie could not be passed. The anæsthetic form of impotence is attended by relaxation, paleness, and coldness of the penis, and by a loose and hanging scrotum. Both these varieties of impotence are sometimes only relative, that is, the individuals are impotent only in respect to certain women.

The emission of the semen is principally caused by the contraction of the circular muscular fibres of the urethra; the m. bulbo-cavernosus is only secondarily affected. The ejaculation is an effect of reflex action; there is, indeed, no doubt that the whole of the sexual act is regulated from a nervous centre in the medulla oblongata. The diseases of the spinal cord, which occur in cases of onanism or of excessive sexual indulgence, evidently depend on the frequent nervous irritation, for simple seminal discharges, unattended by reflex movements, are quite uninjurious. Such discharges not uncommonly accompany the passage of the fæces; they also occur after long continence, and may be most rapidly cured by regular coitus once or twice a week. Too early ejaculations may occur with or without erection; only the latter can be considered a form of impotence. The author refers ejaculation without erection, spermatorrhœa, day and night pollutions, to excessive irritation; tardy ejaculation and aspermatism, the complete absence of seminal emission, to diminished irritation. He observed a case in which a man of twenty-eight could not ejaculate till coitus had been continued for an hour and a half or two hours, and a case of aspermatism in a man of twenty-seven who had never been able to ejaculate during coitus, although he had perfect erections; seminal emissions occurred during sleep in both cases.

Treatment.—In this respect, the author distinguishes three forms of true impotence—(1) the anæsthetic, in which the electro-cutaneous sensibility of particular parts of the penis is diminished; (2) the hyperæsthetic; and (3) where ejaculation occurs without erection. He

treats the first form by applying a pencil connected with the induction apparatus for one or two minutes to the different anæsthetic parts, whilst the other and moistened conduction is placed in the patient's hand. After six or eight minutes, the pencil is changed for a moistened conductor, which is applied to the perinæum, and in very obstinate cases to the fossa navicularis. He obtained good results in the hyperæsthetic form from the constant current. Such a current, derived from sixteen or twenty Daniell's elements, was directed from the middle of the spine to the sacrum for three or four minutes, and then the positive pole was applied to the perinæum, and the negative to the glans or back of the penis.

He has treated 83 cases. Of these, 59 belong to the anæsthetic form; 35 were cured, and 24 were unsuccessful. There were 24 hyperæsthetic cases; of these, 13 were treated with the induction current; 3 were cured, 10 were unsuccessful: and 11 were treated with the constant current; 7 were cured, and 4 were unsuccessful. Thus, out of 83 cases, 45 were treated with, and 38 without, success.

M. Hiéguet, case of aspermatism (Liège, anal. in 'Arch. Gén.,' 1862, ii, 384). B. Schulz, on aspermatism ('Wien. Med. Wochenschr.,' 1862, pp. 769, 787). C. Schmitt, case of aspermatism ('Würzb. Zeitschr.,' iii, 361). T. B. Curling, on sterility in man ('Brit. Med. Journ.,' 1863, ii, 99).

Tabes Dorsalis.—E. Meryon ('Brit. Med. Journ.,' 1863, ii, 204). Prof. Remak ('Deutsche Klin.,' 1862, p. 478).

Urethral Fever.—E. Marx has published an essay on intermittent febrile attacks, and on certain inflammations which occur after operations on the urethra (pp. 124, Paris, G. Baillière, 1861). Under the head of inflammations, he describes the pyæmic localizations in the joints, muscles, and serous cavities, which not very unfrequently follow injuries of the urethra.

The term urethral fever should be restricted to certain peculiar intermittent attacks of fever, of which the author describes two varieties—the slight and the severe. In the former the rigor is generally sudden, though occasionally it is preceded by such symptoms as loss of appetite or lassitude; its duration varies from a few minutes to an hour; should it continue for a longer period, and especially if it is more than usually intense, it is probably the precursor of a severe attack. The skin is shrivelled; the nails, the tip of the nose, and the lips are pale; the breathing is oppressed; the pulse is rapid and sometimes irregular; the thirst is intense; the sensation of cold is most distressing. Then follows a hot stage, of which, however, the intensity bears no proportion to that of the rigor; thus excessive heat may follow a slight rigor, and *vice versâ*. At this time the breathing becomes more free and the anxiety disappears; the pulse becomes full, frequent, and more regular; the face becomes red, the thirst continues great, the head is painful, and the eyes are much congested. After a time the pulse becomes weaker and slower; the thirst diminishes; sweating commences; the patient becomes calm, and falls asleep; the pulse, however, remains somewhat rapid, till even the following morning. Such attacks generally commence from three to four hours after the operation,

passage of a bougie, &c, and not unfrequently recur on four or five successive days. The severe attacks may be again subdivided into—

(1) Those, where the patient is not affected by any serious chronic disease of the genito-urinary organs.

(2) Fulminating attacks, rapidly causing death.

(3) Those complicated with some serious disease of the genito-urinary organs.

In these forms, the cold stage is often very prolonged, and followed by other alarming symptoms, such as stupor or delirium, difficult breathing or even pneumonia, tympanitis, constipation, vomiting, or diarrhœa. It must be noticed that, in many cases of disease of the genito-urinary organs, attacks of intermittent, or of slight continued fever occur before any surgical treatment has been employed. It may be taken as a general principle in respect to the prognosis, that when well-marked hot and sweating stages succeed the rigor the patient almost always recovers; and, on the other hand, that where moderate reaction does not take place an unfavourable result must be dreaded.

Treatment.—M. Ricord, who for a long time denied the value of sulphate of quinine in urethral fever, now administers it as a preventive in all cases, where he is about to perform an operation on the urethra. He gives it for four or five days before the operation to the amount of forty or fifty centigr. (6 to 7 grains) daily, if the patient is young, and has not had previously any attack either from catheterism, or owing to malaria; in the latter cases, or if the patient is old and weak, it may be increased to seventy or eighty centigr. (11 to 12 grains) in the twenty-four hours. Mr. Long has recommended the tincture of aconite ('Liverpool Med.-Chir. Journ.,' Jan., 1858). Civiale has for a long period urged preliminary treatment by soft bougies, as a means of preventing further complications—a method advised also by Mr. Henry Thompson.

As to the curative treatment, rest, and such means as promote the sweating stage, will alone be demanded in slight cases. In the more serious forms, fifty centigr. (8 grains) of quinine should be swallowed immediately after the attack, and the same dose should be given *per anum*. If the attacks recur, the dose of the medicine should be increased, till several grammes are given in the twenty-four hours (1 gramme=15·43 grains Engl.). Large doses should be given in enemas, and not by the mouth. In a case of urethral fever, related by M. Bricheteau, the sulphate, which had been gradually augmented to a gramme, excited nervous symptoms and gastric derangement, and was therefore stopped: three days later, as the fever had become more intense, two grammes were given in an enema—the fever ceased. One or two hours in the day and ten or twelve in the night should be left between each dose; in serious cases the quantity must be gradually increased, till toxic nervous symptoms make their appearance. The quinine must be given by the skin, if the patient has constant vomiting or diarrhœa.

The fever, which occurs independently of an operation, is unaffected by quinine, and its only certain treatment is by attention to the disease on which it depends. This is well shown in a case of dysuria, which

has been related by M. Mercier, in which the patient suffered, even before any examination had been made, from very severe attacks of fever, which were unaffected by quinine. A prostatic obstruction was excised; fever again made its appearance after the operation, but was at once arrested by the same medicine which had previously failed.

Penis.—Dr. Mosler, uremia, &c., from phymosis ('Arch. d. Heilk.,' 1863, p. 289). Dr. Steinhaus, apparent absence of the penis, operation ('Wien. Med. Halle.,' 1862, p. 315). Mr. Dick, on phymosis ('Med. Times and Gaz.,' 1862, ii, 220). M. Dolbeau, on epispadias ('Paris, A. Delahaye'). M. Follin, case of epispadias ('Gaz. d. Hop.,' 1862, p. 335). Mr. Lee, perineal section after the destruction of four inches of the penis ('Lancet,' 1862, i, 222).

Scrotum.—*Elephantiasis*, Prof. Fayer, ('Edinb. Med. Journ.,' vii, 718; 'Med. Times and Gaz.,' 1862, ii, 274). Dr. Wibliu (Ibid., pp. 339, 555; 'Med.-Chir. Trans.,' vol. xlvi, p. 1). J. F. Ogilvie ('Med. Times and Gaz.,' 1862, ii, p. 511). J. B. Quinlan, on hæmorrhage in operations (Ib., 1863, i, pp. 133, 516).

Varicocele.—Mr. Lee ('Brit. Med. Jour.,' 1861, ii, 602). Mr. Tufnell ('Dubl. Quart.,' vol. xxxii, p. 331). Cases of excision of the skin ('Amer. Med. Times,' 1861, ii, 272).

Hydrocele.—J. D. Gillespie, wire seton ('Edinb. Med. Journ.,' vii, 629). M. Duval, method of avoiding the testis ('Gaz. d. Hop.,' 1862, p. 293). M. Gosselin, operation for congenital hydrocele and hernia (Ib., p. 158). T. Ruthnum, on chylous hydrocele ('Madras Quart. Journ.,' iv, 421).

Testis.—H. Demme, tubercular disease ('Arch. f. path. Anat.,' xxii, 155). M. Dauvé, on enchondroma ('Gaz. d. Hop.,' 1862, p. 15). M. Laugier, traumatic orchitis (Ib., 1863, p. 449). Drs. Mudge and Van Someren, fungus testis treated by iodide of potassium ('Madras Quart. Journ.,' iv, 187).

Vulva and Vagina.—M. Boys de Loury, elephantiasis ('Gaz. Hebd.,' 1863, p. 190). M. Boulogne, operation for elephantiasis of the labia (Ib., 1862, p. 189). MM. Martin and Leger, on inflammations of the vulva ('Arch. Gen.,' 1862, i, 174). L. Le Fort, on malformations of the uterus and vagina (pp. 210, Paris, A. Delahaye).

BLADDER.

Hair-pin in the bladder of a girl æt. 19 ('Lancet,' 1863, i, 235). "An attempt was made to extract it by introducing forceps into the bladder, and grasping the pin, but it was too firmly fixed to allow of extraction. Soon after her admission, under Mr. Hilton's care, she was rendered insensible by chloroform, and a pair of dressing forceps were introduced into the urethra, so as to dilate it. First, the little finger, and subsequently, the forefinger, were passed into the bladder, and the hair-pin could be felt towards the patient's right side, firmly fixed in the right wall of the viscus. The reflected part of the body being directed upwards and backwards, one leg of the pin was seized by the forceps several times, but could not be drawn towards the urethra without employing injudicious force. The patient was replaced in bed, warm poppy fomentations were applied over the bladder, and five grains of Dover's

powder given her every six hours. No untoward symptom supervened, and she felt well in three days, and could retain her urine for several hours. At the expiration of a week chloroform was again administered, and Mr. Hilton passed his little finger, and then his forefinger along the urethra into the bladder, and felt the pin still fixed across the right side of the viscus, with the bent part of the body directed backward. A blunt hook, directed by the forefinger, was passed so as to hook on to the hair-pin, and it was pulled first towards the patient's left side, so as to disengage its point from the right side of the bladder, and then drawn downwards towards the urethra, and thus extracted without difficulty. It was then discovered that a piece of one of the legs of the pin had been broken off and left within the bladder, but the finger could not detect it. The bladder was therefore distended by the injection of warm water, and the water allowed to gush outwards, and with it floated the remaining piece of the pin, about an inch long." Had either of the pointed legs presented, Mr. Hilton would have employed a blunt hook provided with an eye; the latter would have been passed over the point and then run along till it reached the bend. The patient could in a few days retain her urine almost as well as before the operation. She left the hospital in every respect well at the expiration of a fortnight.

In some remarks on a similar case, Dr. Billroth states ('Schweiz. Zeitschr. f. Heilk.,' i, 56), that he has found no bad effect from dilating the female urethra with a blunt-pointed knife, towards one side, sufficiently to introduce the forefinger. The only thing that he has noticed is, that when the patient stands up, she sometimes experiences a violent desire to make water, a state which rarely continues more than two or three days. He cannot understand how complicated methods of operating for stone in the female can be recommended. A few months since a woman with stone in the bladder came into the hospital; he dilated the urethra, felt with the finger a stone as big as a large plum; broke it with strong forceps, extracted the fragments, and cleared the debris out by injection. No fever followed; the patient was cured, and left the hospital in eight days. The urethra is often so large in females, that the finger can be at once introduced into it. The operation for vesico-vaginal fistula is much facilitated by the introduction of the finger into the bladder; the sutures are applied with far more certainty and exactness by this means than when the fistula is reached from the vagina alone.

B. Holt, on certain errors in the diagnosis and treatment of retention of urine ('Lancet,' 1863, i, 202). "Retention of urine in a healthy man (excluding that from stricture of the urethra) may be said to occur generally from one of these causes—(1) From over-distension consequent on the postponement of the act of micturition. (2) Upon spasm arising from irritation of the urine after a debauch. (3) From either or both of the above acting upon an elderly person subject to more or less enlargement of the prostate." It is generally supposed that the diagnosis will be at once determined by the introduction of the catheter, but according to Mr. Holt's experience, in this proceeding, "a fallacy occurs which constantly leads to most serious error. The surgeon introduces a silver catheter into the urethra, it is true, but the instru-

ment never reaches the bladder, being either too short (as is frequently the case, especially when the prostate is enlarged), or, being thrust onwards, makes a false passage in which the point becomes entangled. Or again, the surgeon employs an elastic catheter without a stilette, under the impression that thus no damage can possibly be done; and the instrument is then either too short, or, as is frequently the case, it bends upon itself, and never reaches the bladder at all. It has happened that a catheter has been blocked with coagulum, &c., which has not allowed the passage of urine, even after the catheter has entered the bladder; but only great carelessness could overlook this. The only way to be perfectly certain that a catheter has reached an *empty* bladder is to inject water through it, which it will readily admit; whereas if the instrument has *not* reached the bladder, it will be impossible to inject more than a few drops. The same plan may be adopted in those rare cases where a *full* bladder has been reached, but the instrument has become temporarily obstructed with clot, which prevents the exit of urine."

"In January, 1861, I was requested to visit Mr. M—, a hale, hearty man, æt. 62, who was suffering from retention of urine, arising from over-distension of the bladder. He told me that whilst travelling from Birmingham to London he had, after leaving Rugby, an urgent desire to pass urine, which he was compelled to repress, and when he arrived in London he found it impossible to relieve himself of even the smallest quantity. He drove to his house as quickly as possible, and sent for his surgeon, who attempted to pass a catheter, but failed. There was considerable hæmorrhage from the urethra, but no urine passed; the patient was therefore placed in a warm bath, and twenty minims of tincture of opium were administered. At midnight I was requested to see him, when a superficial examination sufficed to show that the bladder was greatly distended, and upon passing a *prostatic* catheter (which was accomplished without the slightest difficulty) more than a quart of urine was removed. Vivid recollections of previous cases in which grave errors had been committed, induced me to point out particularly to the practitioner in attendance the necessity of introducing the catheter at least four times in the twenty-four hours, in order that the bladder might be kept moderately empty, and so be enabled to recover its tone; but that gentleman, believing that all difficulty in the treatment of the case was over, did not think it necessary that I should see the patient again. A fortnight afterwards I had occasion to meet the same practitioner, and upon inquiring about his patient, learned that he was dead and buried! I afterwards ascertained that the bladder had not been relieved by the catheter, as I had advised, because the urine had dribbled away after many hours' retention, and it was therefore believed that there was not any in the bladder."

In another case, "in addition to the urgent symptoms consequent upon an over-distended bladder, the patient lost a considerable quantity of blood from the bladder, which was not effectually arrested until I had recourse to the administration of turpentine in ten minim doses, the good effects of which I have frequently witnessed in such cases.

"Towards the close of last year I was requested by telegram to proceed to a town more than 150 miles distant, to visit a gentleman who had

alarming vesical hæmorrhage. Upon my arrival I found the patient, who was sixty-two years of age, pallid and feeble, partly from loss of blood, and partly from the exhaustion incidental to low irritative fever. On inquiry, I found that my patient, who up to ten days before had enjoyed most excellent health, had had, whilst engaged in transacting important business, an urgent desire to void urine, but was unable to quit the room for that purpose, and that when able to do so a short time afterwards, he had found himself incapable of micturating. A surgeon was sent for, who attempted to introduce a catheter into the bladder, and the instrument was said to have *passed for its whole length*, but no urine was withdrawn. Similar attempts were repeated three or four times, but with the same result; and, although the patient was suffering the most intense agony, the case was now considered to be one of "suppression," and linseed meal poultices were applied to the abdomen, whilst the patient was desired to drink plentifully of barley-water and linseed-tea, in order to '*force the water*.' On the following day the urine was passed in small quantities at short intervals, the swelling and agony remaining unrelieved, and the patient became much exhausted and passed into a typhoid condition. After having been allowed to remain with a distended bladder *for six days*, another surgeon was consulted, who passed a catheter without difficulty, and *removed three pints of bloody urine*. This gave great relief, and the patient *rallied*; but the urine, which was drawn off only twice a day, still contained a large quantity of blood, which was unchecked by gallic acid; tincture of iron, and turpentine in two minim doses, and I was therefore summoned. On my arrival I at once introduced a gum-elastic catheter, and removed a pint of urine loaded with blood; and having then washed the bladder out with cold water, I fastened the catheter in, and directed the patient to evacuate the bladder every four hours. Turpentine, in ten minim doses, in mucilage, was given internally, and repeated every four hours, and produced an almost immediate effect upon the hæmorrhage. In consequence of the coagulum which remained in the bladder, the eye of the catheter became blocked during the night, and the patient was unable to relieve himself. I therefore removed the instrument, and introduced one with a large eye, through which the urine, containing now but little blood, flowed freely. On the following day the urine was nearly natural, and the patient somewhat improved in general condition; and the reports subsequently forwarded to me state that the appetite has returned, the bowels are regular, and the urine is free from blood, but that the patient *has as yet no power of expulsion*, and is still obliged to have the catheter employed. Iron and quinine are now being administered, and the urine is withdrawn three times during the day, and twice in the night. The patient is able to take a daily airing in his carriage; but it remains to be seen whether he will recover the power over his bladder."

"Such cases may be termed *acute*, but there are others of a more *chronic* character in which mistakes of a similar kind are continually occurring. I mean those in which there is frequency of micturition of 'some months' duration, accompanied by great general irritation of the system with *excessive thirst*, and in which the fact that the patient

never thoroughly empties his bladder, but leaves a constant *residuum* of urine, has been entirely overlooked. The following is a good case in point :—Mr. F—— residing on the south coast, consulted me last year in consequence of frequency of micturition, which necessitated his relieving himself every three-quarters of an hour, both night and day. His health was greatly impaired from want of rest, he was very irritable, and had pain over the pubes and *excessive thirst*. He had consulted several surgeons, who had prescribed various remedies without relief. A careful inquiry into the history of the case, assured me that the bladder remained always more or less permanently full, although the ordinary quantity of urine was passed during the twenty-four hours, and although his urethra readily admitted, as he told me, a No. 10 catheter. He had no power of ejecting the urine *any distance from his body*, but it came away in a dribbling, uncertain stream, which dropped down between the legs. I desired him to micturate before me, when only about an ounce escaped; but upon introducing a catheter, I drew off five ounces of offensive urine, and upon injecting the bladder with warm water found that it would not hold more than six ounces. The nature of the case was thus obvious; for six months this gentleman had been suffering from retention of urine, although he passed as much during the twenty-four hours as the kidneys secreted. I desired him to pass his catheter every six hours, and to wash out the bladder every night, gradually increasing the quantity of water injected, so as, if possible, to distend the bladder eventually to its normal capacity. He was ordered to live well and take wine (from which he had previously been debarred), with the tincture of steel twice a day. In a few days he had so far improved as not to require to pass urine more frequently than every four hours, and he now has improved materially in general health; his *thirst* has entirely subsided, and he has gained flesh, whilst the capacity has so improved that he has to relieve himself only once during the night. It is more than probable that this gentleman's bladder may never recover its tone, and that the error of treatment committed will necessitate *the constant use of a catheter for the rest of his life*; but as he has gained some slight power of expulsion during the last few weeks, it is just possible that we may alleviate his unfortunate condition."

"The diagnosis between retention and suppression is so very easy as to render a mistake perfectly inexcusable. In retention there is the urgent desire to micturate, accompanied with violent spasms, not only of the urethra and perineum, but of the whole abdominal wall; and as time elapses, *the urgency increases*, the patient rolling in agony, and straining violently to relieve himself. Besides, the surgeon's hand will at once detect the solid tumour above the pubes, formed by the distended bladder, which will yield a dull sound on percussion. In suppression of urine, on the contrary, there is no urgent desire to micturate, no spasm, and no agony consequent on a distended bladder; but the patient lies in a listless condition, soon passing into coma, whilst the breath and skin exhale a strong urinous smell. Moreover, the bladder will be found empty, and the fingers can be thrust into the pelvis, where the intestines yield a clear percussion sound. It must not

be forgotten that a case of retention will at length pass into a typhoid condition, which might possibly be mistaken for the coma of uræmic poisoning; but the history of the case, and the presence of a distended bladder and dribbling of urine, would at once point out its true nature."

C. H. Moore, on a method of operating for retention of urine in certain cases of cancer of the vulva ('Lanc.', 1863, ii, 218). "There appear to be serious objections to the methods suggested for puncturing the bladder in women. The most promising operation is that through the linea alba, and the most disappointing; for it, more than any other, is attended with the subsequent inconvenience, that an instrument can scarcely, and sometimes cannot, be retained in the track of the puncture. The cause of this difficulty is twofold. On the one hand, as it is the function of the bladder to expel its contents, a catheter or a canula is at least as sure to be extruded as the natural contents of the organ; on the other hand, the channel of the puncture, though at first direct, becomes curved as the urine escapes. When the bladder is full, the apertures in the linea alba and the bladder correspond in situation. It is at this time that the puncture is made. But when the bladder contracts, the puncture in it descends far below that in the linea alba, and a tube, which is flexible enough to lie in both openings, is easily pushed out of the minor one by the bladder. Unless the tube can be re-introduced, which is not always the case, the urine collects in the bladder again, or is infiltrated in the tissues outside it."

In the case, described by Mr. Moore, difficult micturition had been gradually induced by the presence of a large tumour, springing from the ramus of the os pubis and ischium, by enlargement and protrusion of the clitoris and nymphæ, and by œdema of the whole vulva. As the disease advanced, the "difficulty increased; the desire to pass urine was frequent and urgent; the quantity which escaped at each effort lessened; at length a teaspoonful only was voided a few times a day, and no permanent relief was obtained even in the warm hip-bath. The bladder rose to the level of the umbilicus—a broad smooth rounded swelling, dull on percussion, and tender when touched. The countenance looked distressed, and its hue dark. No relief could be afforded to the bladder by the use of the catheter. The meatus was hidden in the swollen parts, and their tender condition, together with the tight constriction of the urinary passage, precluded the use of instruments. As soon, therefore, as the obstruction had reached the degree which has just been described, and it was evident that no relief to the tension of the parts was about to be afforded by a spontaneous sloughing of the tumour, I determined to puncture the bladder."

"Having had chloroform administered, I introduced Mr. Cock's long curved trocar and canula about an inch above the pubes, and passed it through the linea alba into the bladder. Withdrawing the trocar, I evacuated about half the urine, and relaxed the tension of the bladder. Then directing the canula behind the symphysis pubis, and pressing it, as nearly as I could judge, against the inner end of the meatus urinarius, I re-introduced the trochar into the canula, and

pushed both through to the vulva. The relaxation of the bladder enabled me so far to depress the handle of the instrument against the abdomen, that its point came out between the orifices of the vagina and the meatus. The bladder was thus transfixed. I then withdrew the trocar, and passed a string through the canula. To the lower end of the string, I attached the point of a gum elastic catheter of the same size as the canula, and was thus enabled to pull both upwards together, and, as I withdrew the canula, to substitute the catheter for it in the double puncture. A cross piece of wood tied in front of the abdomen to the upper end of the catheter prevented it from slipping backward, and I found that when the wood was against the skin, about one-half of the catheter projected below the vulva; but of course no urine escaped. It only remained to make a lateral opening at about the middle of the catheter in the part nearest the vulva, through which the urine might flow when that part of the instrument was pulled far enough upward. This arrangement was found to be both convenient and safe. Each end of the catheter was secured against withdrawal: the upper end by the piece of wood, and the lower by the ivory ring of the catheter. The bladder being not simply punctured, but transfixed, its wall could slide up and down the catheter securely, but the instrument could not be thrust out of the cavity. And as to the evacuation of the urine, it was only necessary, after oiling the lower half of the catheter, to pull upon its upper end until the lateral hole made in its middle reached the vesical cavity; the urine would then flow out through the lower end of the instrument. When the bladder was emptied, and the upper end of the catheter oiled, traction on the lower end of it brought the hole out of the bladder, and no urine could flow through it.

“Sleep and freedom from pain followed the relief of the retention, In a couple of days the dusky hue of the countenance had disappeared, and a little appetite returned. Some tenderness and swelling came on before the end of a week in the anterior part of the abdomen, a little to the right of the upper puncture, but both subsided in a few days. About a fortnight after the operation, the upper track became too large for the catheter, and the urine welled up continuously by the side of it. Some pus, mucus, and a little urine escaped when the catheter was pulled up for the purpose of emptying the bladder. Fearing there might be inflammation of the bladder from the constant pressure of the instrument, I had a new catheter introduced, and the bladder frequently washed out with tepid water. As the catheter had three openings—one above, one in the bladder, and one below—the cleansing was very conveniently done by means of a syringe. The secretion of pus and mucus speedily ceased, and the patient from that time continued at ease, so far as micturition is concerned, and she suffered from the original disease considerably less than in the early period of the case.”

The advantages of this method were, according to the author, that “it afforded easy exit for the urine; it averted the liability of the tube to slip out of the bladder; it allowed of the syringing or irrigation of the bladder, which might become necessary; and it was capable of

being continuously employed throughout the remainder of the patient's life."

T. Holmes, on congenital extroversion ('Lanc.,' 1863, i, 714). Prof. Zeissl, on acute catarrh ('Wien. Med. Halle,' 1863, pp. 3, 19). J. Adams, case of operation for abscess, &c., ('Med. Tim. and Gaz.,' 1863, i, 506). Dr. Rigauer, on retention of urine ('Deutsche Klin.,' 1862, p. 483, &c.) W. Brown, villous cancer ('Edinb. Med. Journ.,' viii, 1036). W. H. Ranking, encephaloid disease ('Brit. Med. Journ.,' 1863, ii, 209).

URETHRA.

Statistics of internal urethrotomy.—M. Maisonneuve has furnished to the Surgical Society of Paris a *resumé* of the operations of urethrotomy, which he has performed in the hospitals during the last ten years ('Gaz. Hebd.,' 1863, p. 692). The cases are distributed by him into three groups: the first contains those from 1853 to 1858, when he employed a urethrotome with an uncovered sharp edge, and did not adopt the after-use of the catheter; there were 70 cases, of which five died from the operation, and four from accidental causes. The second group contains the cases from 1858 to 1861, when he employed free incisions with the lithotome caché of Frère Côme; 30 cases, 6 deaths from the operation, and 2 from other causes. The third group includes from 1861 to 1863, when he employed the urethrotome with uncovered, but blunted blade, and constantly retained the catheter after the operation; 40 cases, one death.

M. Guyon, on malformation of the urethra in the male (pp. 180, Paris, A. Delahaye). E. Fürstenheim, the endoscop ('Deutsche Klin.,' 1863, p. 313). A. Haken, on urethroscopy ('Wien. Med. Wochenschr.,' 1862, p. 177). W. Busch, simple method of changing the catheter in wounds ('Arch. f. Klin. Chir.,' iv, 36). Prof. Linhart, Caruncles ('Würzb. Zeitschr.,' iv, 87). M. Arrachart, obliteration, &c. ('Gaz. d. Hôp.,' 1863, p. 430). Dr. Montgomery, urethral calculus ('Madras Quart. Journ.,' v, 171).

Prostate.—F. Pauli, on hypertrophy ('Arch. f. path. Anat.,' vol. xxvii, p. 27).

Stricture.—P. Tillaux, on urethrotomy (Paris, Asselin.) M. Phillips, cases of urethrotomy ('Gaz. d. Hôp.,' 1862, p. 594). M. Voillemier, on urethrotomy from before backwards ('Gaz. d. Hôp.,' 1863, p. 474). P. H. Watson, steel catheter ('Edinb. Med. Journ.,' vol. ix, p. 56). M. Bourguet, on the radical cure ('Gaz. d. Hôp.,' 1863, p. 418). Prof. Dittel, on the nosology of urethral fistulæ ('Allg. Wien. Med. Zeit.,' 1863, pp. 252, 257).

STONE IN THE BLADDER.

Practical maxims in lithotrity.—(H. Thompson, practical lithotomy and lithotrity, p. 211.)

(1) Let the urethra at the outset be accustomed to contact with instruments, so that the lithotrite, which it is necessary to employ, can be passed without causing much uneasiness or any bleeding.

(2) Always operate, whenever this is possible, without previously disturbing the bladder by injecting or sounding.

(3) Having determined the position of the patient according to the necessities of the case, slowly introduce the lithotrite, and take care that the blades reach or pass beyond the centre of the bladder before the male blade is withdrawn.

(4) Execute every movement deliberately; open and close, incline, or rotate, slowly, without any jerk whatever; and all without bringing the blades into contact, as far as it is possible, with the walls of the bladder.

(5) Maintain the long axis of the instrument in the median line of the body, and the blades at or near the centre of the bladder, this being the area for operating mostly to be chosen. In screwing home the male blade to crush, it is especially necessary to keep the instrument steady, otherwise much vibration of it may be occasioned, and much lateral movement of the blades from its axis at each turn; a small deviation at the handle produces a large one at the blades.

(6) The usual position of a large stone is near the neck of the bladder; of a small one at or near the back of the trigone, and the lithotrite should be applied accordingly.

(7) When the stone is caught, especially if in the fenestrated lithotrite, rotate it a fourth of a turn on its axis before screwing up firmly or crushing, to make certain that nothing is included besides the stone.

(8) Having broken a stone or a large fragment, the operator may pick up and crush piece after piece consecutively, without further searching, if he is only careful to work the lithotrite exactly at the same spot—the patient of course not shifting his position—since fragments fall immediately beneath the blades of the instrument, and rest there.

(9) Never withdraw a lithotrite *loaded* with calculous debris; a moderate quantity will come away between the plain blades; but if an impediment is felt at the neck of the bladder on withdrawing, return to the centre of the cavity and unload them. This can always be done with a properly constructed lithotrite.

(10) No sitting should exceed five minutes in duration, except under very peculiar circumstances. The large majority of sittings should occupy only three minutes, some less. The mere sojourn of a lithotrite, without any movement, for three minutes in the bladder, causes uneasiness, and often subsequent irritability, which may be considerable if the time is prolonged.

(11) If the patient experiences an unusual amount of pain at the commencement of any sitting, it is wise to postpone it until another day, or make it very short. Such unlooked-for pain is a useful intimation that the urinary passages are not at this time in fit condition for our purpose, and by acting upon it, we may avoid serious mischief.

(12) After the first sitting, it is generally desirable that the patient should have hot fomentations to the hypogastrium and perineum, remain in the horizontal position, and pass his water in that position, if he can. He should remain tolerably quiet until the debris has passed, which usually happens within three days of the sitting.

(13) The removal of debris by injecting and washing out the

bladder, is to be considered the exception to, and not the rule of, practice.

Use of chloroform.—Mr. H. Collis notes ('Dubl. Quart. Journ.,' May, 1862) that "if chloroform is used, the old plan of fastening the hands to the feet must be abandoned, because the chest is thereby dangerously compressed and respiration impeded."

Lithotomy in the Female, by J. R. Lane ('Lanc.,' 1863, i, 34, 57).—"My object in the present communication is, in the first instance, to call attention to what I believe to be, in appropriate cases, a greatly improved plan of operation; and in addition to this to inquire how far we can determine—(1) Whether some of the various operations proposed may not now with advantage be discarded altogether; (2) Which of them are worthy of being retained; and (3) Whether amongst these latter, we can find good grounds for allotting to each its own appropriate class of cases."

Mr. Lane was led to consider the subject of lithotomy in the female in consequence of a case which has been already reported ('Lanc.,' 1862, ii, 370). The patient, whose age was thirty-eight, had suffered from stone for many years; an attempt, which he made to crush it, so greatly aggravated her symptoms, that its immediate removal became a matter of imperative necessity. "The operation was performed in the following manner:—The patient being placed in the lithotomy position, Bozeman's speculum was introduced into the vagina, and held so as to expose its anterior wall, and a straight grooved staff was passed into the bladder by the urethra. An incision was then made into the groove of the staff, commencing just behind the neck of the bladder, and extending backward in the median line for about an inch and three quarters—to within a short distance, in fact, of the attachment of the vagina to the cervix uteri. Through this incision the stone, which was nearly two inches in length, was readily extracted. The edges of the wound were then brought into apposition by twelve silver-wire sutures. Immediate relief of all the painful symptoms followed the operation; the greater part of the incision united by first intention, but, unfortunately, a small portion of its edges at the anterior part sloughed, and when the slough separated, the urine made its way into the vagina. This opening, however, healed by granulation, the granulating surfaces being held together by the insertion of two wire sutures. It remained closed for a fortnight, the patient being able to retain half a pint of urine without difficulty; but at the end of this time, the uniting medium, which was at one point very thin, gave way, and an opening was formed just large enough to admit a probe. Failing to close this by repeated applications of caustic, I pared its edges, and again applied sutures, this time with complete success, and the patient shortly afterwards left the hospital quite well, having perfect control over her urine, and all inflammation and irritability of the bladder having subsided, the vesico-vaginal septum remaining as thick and strong along the line of the incision as elsewhere."

Vesico-vaginal lithotomy has been practised by many operators since the time of Rousset, but the danger of its leaving a fistulous aperture

was so great, that it has been generally regarded with disfavour. "Now, however, all this is changed. The experience of the last ten years, has abundantly shown that almost every case of vesico-vaginal fistula, even when attended with great loss of substance, may be firmly and permanently closed by the improved plastic procedures now in use. We may therefore very fairly feel confidence in our ability to close the clean longitudinal incision made for the extraction of a stone; which is attended by no loss of substance, and with no cicatricial contraction or induration."

"Vaginal lithotomy, immediately followed by suture, possesses, in my opinion, many and great advantages. Perhaps there is no part of the vesical parietes, which may be incised with so little risk. The incision being in the median line, no vessels of any magnitude are likely to be wounded. The vesico-vaginal septum is composed of dense tissue, little, if at all, liable to urinary infiltration, and the free outlet provided for the urine would, even under other circumstances, render such an occurrence improbable. The chance of pelvic cellulitis is, therefore, remote. The peritoneum is not likely to be injured, for even if the incision required to be carried as far back as the attachment of the vagina to the cervix uteri, the vesico-uterine reflexion of the peritoneum is situated nearly an inch higher up. Velpeau, in his inquiry into the history of the operation, seems to have been struck with its great immunity from danger, and with the slight degree of constitutional disturbance which it entails; in fact, he did not meet with the record of a single fatal case."

Mr. Lane urges that the urethra "should on no account be interfered with. The incision should commence just behind the neck of the bladder; that is to say, in an adult person at least an inch and a quarter behind the external orifice of the urethra. Incision of the urethra gives no additional room, but increases the length of the wound without any compensating advantage whatever, and the urethral portion of the wound is incomparably more difficult to close than that which is deeper in the vagina."

"The conclusion which I have formed is that in an adult female, and especially in the case of a large stone, lithotomy through the vagina, conducted on proper principles, and followed by immediate closure of the wound, is the safest and best procedure that has as yet been devised, and deserves to be accepted as a recognised operation in surgery. It should be understood, however, that it is not applicable to children; neither is it well adapted for young unmarried women, in whom the difficulties of this operation must necessarily be greatly increased."

As to the other modes by which a stone may be removed from the female bladder, the author considers that the high operation should be "dismissed altogether from the practice of surgery. The only conceivable case in which it would be justifiable would be, perhaps, one in which, with a deformed pelvis and a very large stone, extraction per vaginam was impossible."

"Urethral dilatation should be only practised in cases where the stone is of small size. To fix a maximum, I would say, in an adult, not larger, certainly, than an acorn, and in a child not larger than a horsebean."

“Though incision of the urethra *downwards* towards the vagina is in every way objectionable, it is otherwise as regards incisions made in an *upward* direction. By dividing the urethra and neck of the bladder towards the symphysis pubis, room may be obtained for the extraction of a moderate-sized stone, without injury to any important structure, and without the disadvantage of laying one mucous canal open into another, when the two are only separated naturally by a very thin partition.” Mr. Lane would prefer:—“If any incision of the urethra is to be made to depend upon incision alone, rather than combine it with dilatation; and I believe that by so doing the chance of incontinence would be diminished. Of all the urethral methods, it appears to me that the incision upwards is the only one at all deserving of confidence. It is, perhaps, not altogether devoid of the risk of urinary infiltration into the loose areolar tissue between the bladder and the symphysis pubis; but the urethra, which is situated at the bottom of the incision, forms so convenient a groove for the escape of urine, that this risk is probably not very great. I should myself, in a suitable case, always prefer the vaginal incision, as attended with less risk at the time, and less danger of subsequent incontinence; but the urethral incision, for a moderate-sized stone, is undoubtedly a much easier and less troublesome operation.

“The *lateral* operation is a method which, though it can scarcely be called new, is not at all generally known, and not nearly so well known as, I think, it deserves to be. It is, as nearly as the different structure of the parts will permit, the exact counterpart of the lateral operation in the male. It may be performed in the following manner:—a straight grooved staff having been introduced into the bladder, an incision is to be made on the inner surface of the left nympha, commencing half an inch above the meatus urinarius, and passing obliquely downwards and outwards parallel with the rami of the pubes and ischium. This incision should be carried deeply into the space between the rami on the outside and the vagina on the inside, care being taken not to wound the vagina, which should be protected, and pushed inwards towards the median line by the left forefinger, introduced into the wound. With the same finger the staff should be felt for deeply in the wound, and the knife should be made to penetrate the groove at a point corresponding, as nearly as can be judged, to the vesical termination of the urethra. It should then be passed onwards into the bladder, its cutting edge being turned obliquely downwards and outwards towards the left side, just as in lateral lithotomy in the male. The incision may be enlarged, should it be thought necessary, as the knife is withdrawn, by a further division of the tissues in the same oblique direction. The ordinary lithotomy forceps can then be introduced into the wound for the extraction of the stone. This operation, or something very like it, seems to have been practised by Frère Jacques. It has been condemned in succession by several writers of note, but, as it appears to me, without sufficient grounds. Its revival, or, I might almost say, its introduction, is due to Dr. Andrew Buchanan, of Glasgow.”

The author terminates his remarks by submitting for consideration the conclusions which he has himself formed, “with reference to the

subject of lithotomy in the female, bearing in mind always that, though the first object is undoubtedly to remove the stone with as little risk as possible to the life of the patient, yet that it is of almost equal importance that this should be done without permanent injury to the retentive function of the bladder and urethra. These conclusions are briefly as follows:—

“1st. That dilatation of the urethra should only be employed for the removal of stones of very limited size; otherwise it is attended with serious risk of incontinence of urine, *that incontinence being* incurable.

“2nd. That incisions of the urethra in the *downward* direction should be discarded altogether; but that the incision *upwards* may be practised with but little danger to life, and little risk of incontinence of urine. It is not, however, adapted for the removal of stones of any considerable magnitude, neither is it well suited for children. I believe free incision to be preferable to any combination of incision with dilatation.

“3rd. That the vesico-vaginal incision, with immediate closure of the wound by suture, is admirably adapted for the removal of stones in the case of adult women, in whom the vagina is of average capacity; that it is the only safe and available method for the removal of stones of large size; that it is attended with a minimum of immediate risk, and no risk at all of *permanent* incontinence of urine.

“4th. That the lateral operation of Dr. Buchanan is founded upon sound anatomical and surgical principles, and is probably the best operation that can be practised in children. It is also well adapted for young and unmarried women, in whom the small size of the vagina would contra-indicate the vesico-vaginal method. In these latter cases the choice would, therefore, be between the lateral operation and the incision upwards of the urethra.

“5th. That there are scarcely any conceivable circumstances which would render the high operation above the pubes justifiable.

“6th. That the ‘vestibular’ operation of Lisfranc possesses no merit of its own to compensate for its manifest disadvantages.”

G. Allarton, treatise on modern median lithotomy. M. Civiale, statistics (‘Gaz. d. Hôp.’ 1863, p. 42). C. F. Hecker, on encysted stones (‘Arch. f. Klin. Chir.’ iii; ‘Gurlt’s Report,’ p. 438). M. Giraldès on stone in children (‘Gaz. d. Hôp.’ 1862, p. 465). M. Dolbeau, case of very large stone (ib., 1863, p. 403). L. Bauer, on the recto-vesical operation (‘Arch. f. Klin. Chir.’ iii, 158). M. Civiale, lectures on lithotrity (‘Gaz. d. Hôp.’ 1863, p. 153, &c.).

HAND AND FOOT.

On disease of the astragalo-calcaneal joint, produced by injury, by R. W. Coe (‘Brit. Med. Journ.’ 1863, i, 62). “From my observation, during the last ten years, of the diseases of the tarsus, more especially of those following upon slight blows or sprains, I may safely assert that the astragalo-calcaneal joint is more frequently affected than either of the other tarsal joints; that, from the functions and anatomical character of the astragalo-calcaneal articulation, the bones entering into its composition very frequently and early participate in its diseases; that,

from its proximity to the ankle-joint, the latter articulation is generally looked upon as the seat of the mischief, which is really situated in the astragalo-calcaneal joint; that the signs of the beginning of mischief in the astragalo-calcaneal joint are very easy to be appreciated; that a careful attention to the history of the cases I shall relate, and the results of the treatment had recourse to, point out what course should be adopted in their management."

"John Bilby, æt. 32, collier, was admitted into Eaton Ward of Bristol General Hospital, February 24th, 1859.

"*History.*—He sprained his left foot about three years since by slipping off a metal rail underground. He worked up to seventeen weeks since. He had not any treatment for his foot until November 5th, 1858, when he went into the infirmary, which he left in seven weeks, on account of his wife's illness, his foot being then worse.

"*Present appearance.*—He was thin and pale; the left ankle was swollen. The swelling was not in the ankle-joint, but in a line corresponding to the astragalo-calcaneal articulation; it projected on each side below the corresponding malleoli, also posteriorly above the projecting part of the calcaneum, thrusting out the tendo-achillis. On grasping the calcaneum and attempting to move it on the astragalus, a grating was felt, as if the bones were rough; there was sufficient motion to give the idea of weakening, if not entire destruction, of the interosseous astragalo-calcaneal ligament. He could move his ankle-joint without pain, but he felt pain when he put his foot to the ground. The pain complained of was exactly in the situation of the astragalo-calcaneal joint.

"March 2nd, 1859.—I made an incision, beginning a little below and in front of the external malleolus, carried it under the external malleolus at the distance of an inch, and brought it up to the inside of the tendo Achillis, an inch above the insertion of the latter. A dépôt of pus, in the neighbourhood of the tendon, was opened; a probe could be passed deep into the astragalo-calcaneal joint, and rough bone felt. I dissected on, and exposed the joint, and found it clearly diseased, and determined, if possible, to remove the articular surface of the os calcis. I made a second incision, an inch and a half in length, across the dorsum of the foot, which fell on the anterior extremity of the first, so as to enable me to divide any fibres of the interosseous ligament that might be remaining. I dissected up the side flap for a short distance, and opened into the articulation without injuring the peroneal tendons. I found the articular surface, especially of the calcis, roughened, and a number of white, soft granulations between the bones; these were seen especially in front. I succeeded, partly with Hey's saw, and partly with the chisel and gouge, in removing the articular surface of the calcis, and eventually obtained a moderately smooth surface. The bones were drawn into position by the tendons, the flap was fastened down by sutures, and the limb laid upon its outer side.

"For some time the case promised fairly, indeed, I think, might eventually have recovered, but the man became impatient, as his wife and child depended solely on himself, and he begged to have his foot removed, to which, much to my annoyance, I was obliged to accede.

I removed his foot at the ankle-joint; he quickly made a good recovery.

"When this man came under treatment I had determined that ankylosis of the joint was the termination to be sought for in this disease, when the mischief had advanced to suppuration; and that, in the majority of cases, this result was hindered or prevented by the difficulties in the way of the escape of the products of inflammation, and of the *débris* of the broken-down tissues. I thought that, if I gave free exit to those products, and, in addition, a new surface to the bones, I might possibly succeed in bringing about this desirable result. In the present instance I now believe that too much was attempted; it would have been better merely to have made free openings into the articulation, for the escape of morbid products, leaving to nature the preparation of the bony surfaces, especially as they were smoothed with so much difficulty."

In one case the author removed both the astragalus and the os calcis; and though the patient was a long time in recovering, she ultimately did get well, with a useful and shapely foot. "I received a letter of thanks from her last November, telling me how well able she was to perform her household duties. Before preparing this communication a friend kindly saw her for me, and reported very favourably of her condition. This is only the second recorded case in which both these bones have been removed."

"*Treatment.*—"1. Whilst the joint (and by the term joint is meant, not only the two synovial sacs between the bones, but also the interosseous ligament) is simply irritated or inflamed, compel perfect rest through a long period of time (say months), and the occasional application of leeches or warm soothing applications; and when the recovery is sufficiently advanced to allow the patient to leave the bed, insist upon the foot being relieved from the weight of the body for many weeks or months, as by the use of a wooden leg, or of crutches. This plan is to be used in every case.

"2. When there is evidence of the presence of pus in the articulation, without any external opening, or when an external opening exists leading down to the joint or bare bone, but not affording a free exit to the discharge, then open the joint by as free incisions as possible, in hope that, by relieving the parts from all irritation, they may recover.

"3. When the disease has made still further progress, and the bones become so involved as to render it unlikely that the last plan would answer, or after the failure of that treatment, then I would very strongly advocate the propriety of removing the os calcis; thus giving the under surface of the astragalus the best chance of recovery, and preserving to the patient a most useful and shapely foot.

"4. When both bones are apparently immediately affected, I would advise their removal, as also that of the projecting malleoli of the ankle-joint. So far as regards the disease, this proceeding is as completely eliminative as amputation at the ankle-joint itself, but has the great advantage of preserving a very useful, and assuredly a more sightly, extremity than the stump of an amputation.

"5. When, from the long-continuance of the disease, many of the

neighbouring joints and bones are affected, as the ankle-joint and bones and joints of the tarsus; or when, superadded to the original disease, there is a well-marked constitutional or scrofulous diathesis, of such a nature or to such an extent as to render it probable that the restorative powers of the patient would not be able to bring to a favorable result the designs of the surgeon in some of the foregoing plans; then, and not till then, do I think amputation of the ankle is justified."

R. Volkmann, on the etiology of club-foot ('*Deutsche Klin.*,' 1863, pp. 329, 341). If we allow the name, club-foot, to have its widest signification, we must distinguish, with reference to the etiology, two principal varieties, the *primary or idiopathic*, and the *secondary or symptomatic*.

Primary or idiopathic club-foot is always a varus or equino-varus. It must be considered to depend simply on an arrest of development, and is therefore always congenital.

Secondary club-foot may be acquired at any period of life, either before or after birth. It is the result of most different changes in the muscles, nerves, and even bones; so that it is by no means adequately represented by the forms varus, valgus, equinus, and calcaneus.

Dieffenbach wrote, in 1841, that infants are always born with "club-foot of the first degree," the soles of the feet being turned towards one another; the correctness of this statement has been recently recognised by Henke. The etiological conclusions which may be drawn from this fact have been stated by the friend of Johannes Müller, the Dane Eschricht. He showed ('*Deutsche Klinik*,' 1851, No. 44; on foetal curvatures) that the form of the foetus underwent certain changes during the process of normal development in the uterus, changes which consisted of unrolling and twisting of entire limbs and portions of the skeleton. The foetus blooms, if it be allowed to say so, like a bud. It unfolds itself; the head, which had been bent till it touched the breast,—not, indeed, because of flexion in the joints of the cervical vertebræ, but because of the very shape of the cranial bones,—becomes more erect. The caudal part of the vertebral column which had been also extremely curved towards the abdomen, straightens in the direction of the longitudinal axis of the body, not because of the action of the muscles and joints, but because the bones and soft parts grow straight. Moreover, the lower extremities are peculiarly twisted. It must be here noted, that at the time when they are applied to the surface of the abdomen, they are also twisted in such a mode that their popliteal side, and not their anterior surface, touches the abdomen of the embryo; and that the little, not the great toes, are in contact, a reason why in abnormal union of the pelvic extremities (Sirens) the little toes are always found to be adherent, and why the double limb has at each outer edge a great toe. But this unrolling of a lower extremity is not effected by motions of the joints and muscular action; it is the result of a twist in the whole thickness of the limb, and especially of "growth of the bones in a spiral direction."

Such a twist or unfolding arrives at its full completion more slowly in the lower than in the upper part of the extremity; indeed it is not completed at birth, as has been already mentioned. Should it not

take place at all, or not attain a proper amount at the same part, the foot will be fixed in its false position of varus or equino-varus.

Our experience has shown us that almost all cases of congenital club-foot very exactly agree with this *embryonal theory*, which was first scientifically founded by Eschricht. It will be found on anatomical examination of the newly-born infant affected with talipes varus, that every part is adapted to the abnormal form. The skin, muscles, and ligaments are all somewhat too short on the concave side; even the cartilaginous and osseous surfaces are such as to suit the false position, the form and direction of the articular surfaces being slightly, but still very distinctly, abnormal. The club-foot is idiopathic; neither the nerves, muscles, ligaments, nor bones are primarily affected, nor can it be said that the deformity takes its origin from any one of them. It is true that some authors, especially Scarpa, have urged the secondary characters of the contractions, particularly of those of the muscles and tendons; but their assertions, though essentially correct, were not supported by sufficiently cogent reasons. So long as it was supposed that a club-foot had been originally of normal form in the uterus, and had only become contracted at some later period, medical men naturally recurred to the muscles, or, going further back, to the nerves, the brain, and the spinal cord, for an explanation why the abnormal position occurred. Thus the supposition generally admitted was that of the primary or antagonistic contraction, of the nervous or, at all events, myopathic nature of club-foot; in short, its origin was generally explained by a *mechanical theory*.

The success of subcutaneous tenotomy appeared to confirm this view, although the supposed nervous origin of congenital club-foot could not explain why its form is so constantly the same, the number of cases of congenital valgus, of pure equinus, calcaneus, being infinitely small in comparison with that of the common equino-varus. According to that supposition, the same nerves must have been always affected. This constancy of form is unfavorable also to the supposed proof drawn from the fact, that malformations of the brain and spinal cord frequently accompany club-foot. How could spina bifida, situated as it is in different parts of the spine, and accompanied by most varied conditions of the spinal cord, by hydrocephalus, by anencephalus, &c., almost invariably induce irritation of the same nerves? Just the opposite is the case in the forms of club-foot acquired at a later period of life; especially when the nervous nature of the affection is most certain, is there an extraordinary variety in the form, sometimes pure equinus, sometimes varus, sometimes valgus, &c.

It is of importance to notice that there are no signs of retrograde changes in the muscles or nerves in the ordinary cases of congenital club-foot; the most minute dissection only gives a negative result, a statement which has been often made, and one which the author can confirm from his own researches. There is, therefore, a very remarkable difference between the primary and symptomatic forms; in the latter, and particularly where the affection is primarily nervous, retrograde parenchymatous changes very soon appear in the muscular tissue. In the primary form no such alterations occur till a late period, when

the deformity has been increased by walking and standing, and the foot has become fixed; some muscles, and specially those placed on the convex side of the curvature, are then little or not at all employed, and accordingly suffer in their nutrition.

It may now be readily understood how tenotomy acts, and in what cases it is likely to be useful. In primary club-foot, it overcomes only that fraction of the resistance which a single tissue, the muscles, present to the reduction of the foot to its normal position. The contraction of the skin, subcutaneous cellular tissue, ligaments, and bones must be overcome by orthopædic after-treatment. In the symptomatic form the condition is usually much the same; for though the affection may have arisen from a single tissue, as the muscles, yet all the other surrounding parts adapt themselves to the false position with such rapidity as to oppose much resistance. The importance of tenotomy really consists in this, that it attacks the parts in which the danger of operative interference is the least, and of which the resistance is usually the greatest. Hence it results that it should only be employed when the muscles really present considerable resistance. The operation is not indicated when the foot can be placed in a proper position, either with or without the aid of chloroform. For we must not forget that the operation directly weakens certain muscles, and that it may have other injurious effects. In the treatment of club-foot, tenotomy is only the auxiliary of orthopædic treatment.

Secondary club-foot is usually acquired during extra-uterine life; of course it may occur as a congenital affection. Most of the causes which produce it at later periods may, in exceptional cases, occur in the fœtus. It may depend on some disease of the nervous system, of the brain and spinal cord, or much more rarely of its peripheral portions; the disease may be of a spasmodic, or, as is very much more often the case, of a paralytic nature. Acquired varus is almost without exception the result of paralysis, and is most commonly seen in cases of infantile paralysis, more rarely in Pott's disease of the spine. In other cases, secondary talipes may be caused by the foot being kept in an unnatural position for a long time. Such is the pes equinus, which is developed in cases where only the toes and the heads of the metatarsal bones touch the ground, owing to one limb being much shorter than the other. The same condition has often been induced in a similar manner by large painful ulcers of the back of the calf. The formation of cicatrices, inflammation of the ankle-joint, and inflammatory retractions of the fascia, are other causes. The frequency with which a primary affection of the muscles acts as a cause cannot yet be decided. In very rare cases, talipes is produced by the abnormal form, or entire absence of some bone. The author terminates with the details of some cases, which appear to prove that pressure by the uterus may be a cause of talipes.

Treatment of club-foot.—Mr. Bryant ('Brit. Med. Journ.,' 1863, i, 415) has carried out the following practice extensively at Guy's Hospital with great success. "The rule which I apply to these cases is as follows:—That if the foot can be restored with but little force

to its normal position, a cure will, in all probability, be secured by simple means, that is, by extension, and that the operation of tenotomy may be set aside; but if much force is called for to bring about this result, the division of the contracted tendons should be performed.

"The mechanical means which I have been in the habit of employing are very simple, a good firm linen strapping being all that is required by way of material. The method of its application is also very simple, and may be thus described. If the case be one of varus or equinovarus, a piece of strapping about one inch wide, broad enough to cover the body of the foot, and about nine inches long, should be selected, and fastened by at least one circular turn round the foot, leaving the end on its outer side; the foot is then to be brought to the required position, and fixed there by forcibly bringing the extremity of the plaster to the upper and outer part of the leg, using it as a side splint. This upper extremity is then to be firmly held in position by an assistant, whilst a second piece is applied round the foot and ankle as a figure of 8. By this turn the external upright plaster-splint is firmly compressed towards the leg, and thus drawing upon the ankle, turns the deformed foot firmly outwards, and fixes it in the required position. A third or circular piece may then be applied round the leg to fix the upper portion of the vertical plaster-splint, and the thing will be complete.

"If these strappings be well applied, it will not be necessary to readjust them for at least three or four days; by such means a large proportion of cases will be readily and permanently cured.

"The principle of its application rests in the extending force which is employed by the external or vertical portion; the second or figure-of-8 binding this vertical splint firmly to the leg, increasing its extending force and making it permanent."

Hand.—M. Delore, on congenital union of the fingers ('Gaz. Hebdomadaire,' 1863, p. 508). Mr. Smith, on injuries ('Lond. Med. Rev.,' iii, 11). Discussion on an affection produced by post-mortem examinations ('Med. Tim. and Gaz.,' 1862, ii, 451). MM. Mirault and Verneuil, curious affection ('Gaz. Hebdomadaire,' 1863, pp. 113, 131). M. Verneuil, plastic operation for a burn ('Gaz. d. Hôp.,' 1862, pp. 542, 548). Mr. Annandale, on excision of the finger-joints ('Edinb. Med. Journ.,' viii, 253).

Foot.—Case of onychia maligna cured by the local use of arsenic ('Med. Tim. and Gaz.,' 1862, ii, 7). Mr. Jordan, on fibro-cellular annulus of the ankle (ib., 1862, i, 208). A. Hirsch, on the Madura-foot ('Arch. f. path. Anat.,' vol. xxvii, p. 98). G. Bidie, notes on morbus pedis entophyticus ('Madras Quart. Journ.,' iv, 222). A. Collas, on the endemic degeneration of the bones of the foot (Rev. in ib., p. 331). H. V. Carter, the fungus disease of India (Rev. in ib., p. 150), and on mycetoma ('Brit. and For. Med.-Chir. Rev.,' vol. 32, p. 198). Dr. Marston, the fungus foot of India ('Arch. of Med.,' iv, 48). Mr. Hilton, disease of the bones ('Lancet,' 1862, ii, 670). W. Henke, contraction of the metatarsus ('Zeitschr. f. rat. Med.,' 3rd ser., vol. xvii, p. 188). Dr. Russell, on flat-foot ('Brit. Med. Journ.,' 1862, ii, 105). MM. Duchenne and Bouvier, on flat-foot ('Mém. de la Soc. de Chir.,' v, 533, 559). M. Foucher, sub-ungual exostosis ('Gaz.

d. Hôp.,' 1863, p. 497). A. Staffhorst, on exarticulation of the foot by Malgaigne's method (Götting. Deuerlich). Dr. Heyfelder, on resection of the astragalus ('Dubl. Quart. Journ.,' vol. xxxiii, p. 67). Dr. Bradford, excision of the os calcis, cuboid, &c. ('Amer. Med. Tim.,' 1862, i, 38, 101, 171). M. Vanzetti, on excision of os calcis ('Gaz. d. Hôp.,' 1862, p. 523), and cases ('Med. Tim. and Gaz.,' 1862, ii, 357).

Extremities.—R. Billroth, extraction of piece of wood from the forearm ('Schweiz. Zeitschr.,' i, 54). C. Hüter, anatomical studies on the joints of the extremities ('Arch. f. Path. Anat.,' xxv, 572; xxvi, 484). M. Debout, on artificial substitutes in congenital affections ('Gaz. d. Hôp.,' 1863, pp. 110, 162). Dr. Martini, on artificial limbs ('Schmidt's 'Jahrb.,' vol. 115, p. 105).

ORTHOPÆDIC SURGERY.

M. Malgaigne on stiff joints (lectures on orthopædic surgery). The following remarks deserve attention, for cases in which the joints become more or less stiff are very common, and too often neglected by the medical attendant. False ankylosis frequently results from a limb being long retained in one position, sometimes from arthritis, sometimes from the after-effects of fractures or dislocations; for example, a man has the lower end of the radius fractured, a bandage is applied, and the fingers are kept motionless and extended; forty days later, the surgeon uncovers the limb, the fractured ends are united, but the patient is much more helpless than directly after the accident, for all his finger-joints are stiff. The patient, as the rule, loudly complains; to this the surgeon replies that all will go well in time. The end not unfrequently is, that the patient becomes permanently disabled, for the natural mobility of a joint can only be restored by motions performed at a proper time and to a proper extent. Time alone renders the case incurable. Other errors, which are too often committed by surgeons, are to direct the patient to move the limb himself, or to recommend certain baths, the treatment in the former case being insufficient, in the latter useless.

Diagnosis of false from true ankylosis.—Many surgeons, and in particular Bonnet, have declared this diagnosis impossible; Malgaigne has, however, maintained for twenty years the contrary, and taught his pupils the differential diagnosis of the two forms. If, for example, in a case of osseous ankylosis of the bones of the elbow, the surgeon attempts to forcibly extend the forearm on the arm, at the same time pressing with his knee against the projecting angle, pain will only be felt at the points directly compressed. If, on the other hand, the union be fibrous, the same extension will cause pain at points which are not at all compressed, but which are being forcibly stretched; the pain, besides, is most acute.

Prognosis.—It is absolutely necessary for success that the surgeon himself should carry out the treatment, and that the patient should be willing to bear much pain and trouble. "An English lady was attacked, a few months ago, by slight arthritis of the wrist. She was declared to be cured at the end of fifteen days; although she could not move the joint, her medical man affirmed every week that it would get all right;

at length, at the end of the fifth month, she became anxious, and I was consulted. It is now two and a half months since I began the treatment; much has been gained, and I believe I shall be successful, but the case is not yet cured." She ultimately recovered after six months' treatment.

Indications of treatment.—Our object is, not only to restore the natural mobility, but also, where that is impracticable, to restore the form alone by giving the limb a better direction; the treatment must vary accordingly. One of the greatest difficulties in practice is to determine when to commence exercising the joint. "There has been arthritis; the inflammation has simply passed through the acute stage, and after a month or six weeks appears to be no longer present, or the patient being of unhealthy constitution, or the case badly treated, it has first become chronic, and then ultimately disappeared. How can we determine that the disease has really retrograded to that degree that we can commence the restoration of motion, without running danger of re-exciting violent inflammation, of which suppuration and death may be the necessary results; and yet time presses. If interference may induce such serious consequences, inaction still more certainly condemns the patient to a condition in which even the most ordinary actions may be difficult or impossible. In 1838, I filled the office of M. Baffos, at the hospital for sick children. There were in the wards many cases of hip disease, among others a child of seven years, in other respects in good health, and in whom I excited no pain whatever by pressing freely on different parts of the hip; yet there was extreme pain as soon as I tried any movement. Was this a case of stiff joint, or did the inflammation still continue? Both cause, as you know, atrocious pain under such circumstances, yet I required a diagnosis. I hunted-up authors, I found no information. I applied to the most deservedly renowned surgeons, my question appeared to surprise them; none of them had thought of this difficulty. Left to myself, I pressed on various parts of the joint, and most carefully on those said to be nearest to the capsular ligament. Many theorists have asserted that, by pressing in front in the hollow of the groin, you are almost on the head of the femur. This region was insensible in my case. Others, that by pressing the trochanter major against the ilium, you pressed the articular surfaces against one another, and that this would, in case inflammation was present, excite pain. I tried it, there was no pain. I then commenced with moderate movements. After two or three days it became very difficult to effect them; I continued, however, but soon it became necessary to stop altogether. The articular inflammation had recommenced; it became intense, the joint suppurated, dislocation ensued, and the little patient died. Convinced that I had not known the proper method of examining the joint, I set myself to study, and have by perseverance acquired a better knowledge of how to test the condition of the parts. For hip disease, in particular, there is one point which you must remember; pressure over an extended surface would teach you nothing; but press forcibly, with the fingers curved like a hook, behind the trochanter, and if there remains any inflammation, you will be certain to excite pain. The same is the case with the

elbow; at the level of the head of the radius the synovial membrane is almost immediately under the integument; press forcibly on this point with your thumb; if you do not excite pain, you may be satisfied there is no longer any arthritis. In the shoulder you will sometimes, though rarely, excite some pain by pressing on the posterior or outer side; but it is in front that you must seek it, by pressing forcibly on the head of the humerus. Such examinations will enable you not only to distinguish traces of arthritis just before it disappears, but also to diagnose inflammation of the joint when just commencing. So long as you find pain at these joints you should take as your rule, that the limb must be kept motionless; any motion, far from being useful, would excite inflammation.

"So far we have considered only the fibro-serous portions of a joint; but when an articulation has been for some time diseased—for example, after a couple of months in arthritis of the shoulder—the muscles, and especially the deltoid, become paralysed and extremely painful near their upper and lower attachments. You will only overcome this difficulty by examining the points just mentioned. If pressure on them is not painful, employ regular movements; it is the best way of relieving the pains, and restoring the contractility of the muscles. Thus you will not now fear to act, armed as you are with means which show the time for movement; you will not fear even when the part is still swollen, for the swelling also often yields only to exercise." It is in some such cases of simple stiffness that bone-setters occasionally gain brilliant results from their manipulations.

Cases in which no attempt should be made to restore mobility.—It may be laid down as a practical aphorism that in the ginglymoid articulations, especially the elbow, it is impossible to restore motion after a lapse of two months. In other joints, as the shoulder, the surgeon may act with some probability of success, after three or four months; for the latter articulation has a loose capsular ligament, whilst the elbow, like other ginglymi, is tightly held by the lateral ligaments, which become thickened and contracted, so as to offer extraordinary resistance.

Treatment by the hand.—In slight or recent cases this method is sufficient. "You may have seen this morning a young man with fractured clavicle, who has had the limb immobilised for thirty days; the bandages were taken off; the elbow was stiff, so that it could not be moved. It was important to overcome this complication. I seized his arm with one hand, and with the other I pressed on the forearm, but the biceps presented great resistance. I then had the shoulder and arm fixed by assistants, and by pressing forcibly on the forearm I succeeded in extending it, and then at once caused the joint to perform all its natural functions. The violent pain felt by the patient disappeared as soon as the limb was extended. In such a case all that is necessary is to repeat once or twice the difficult movements; there is no occasion for the use of any machine." On the next day there was slight traumatic arthritis, with acute pain at the outer side of the joint, and slight crepitus in the bursa over the olecranon; twenty-four hours later it had again disappeared.

It is more especially in unhealthy subjects, scrofulous children, or

delicate females, that there is a danger of arthritis ensuing. Not that this is a reason for refusing them the benefits to be derived from treatment, only the surgeon must not endeavour to gain too much at once; he must reiterate the exercises, so as gradually to restore perfect mobility. He must act in the same cautious manner in cases of some standing. He need not fear the delay; he may let, when necessary, five or six days pass between the sittings, without running danger of losing what he has gained.

When the surgeon's object is simply to place the limb in a better position, machines are generally unnecessary. As in such cases it is only necessary to flex or extend, the best plan is to do all at once. The patient is placed under chloroform; then the upper segment of the limb being firmly fixed, the surgeon seizes the inferior, and endeavours, by a single, sudden effort, to bring the part into the desired position. The inflammation, which inevitably follows, is usually of no great importance; to check it the limb should be immobilised. It may be noted, as an important practical remark, that the extension or flexion must be carried to a somewhat greater extent than what is intended to be the final position; thus if a limb is to be ultimately flexed at a right angle, force the position to an acute angle, for a certain amount of secondary extension is sure to occur.

Treatment by machines.—The utility of machines does not consist in their making *extensive movements*, but in their effecting certain *movements exactly to the degree intended*. Such graduated changes can only be obtained by means of them; the hand flexes or extends a joint by sudden, intermittent efforts, and thus to obtain a flexion of two degrees produces one of four; it is only by mechanical apparatus that the force employed can be calculated and regulated. The fundamental rule in the use of machines is *never to go too far, and never to go back*. It must always be remembered that acute arthritis will ensue if force is employed beyond a certain degree. Bonnet's instruments, in which the force employed cannot be accurately estimated, are accordingly considered by Malgaigne quite useless. The changes at first produced in the position of the limb must be slight; it is only at a later period, when the surgeon has learned the degree of reaction of the parts, that he may dare to effect more extensive motions.

The treatment is not concluded when the limb has been flexed or extended by the use of an instrument; the same motions must then be repeated with the hand for some time, before the patient will recover sufficient power to effect them himself. Thus, after flexing the forearm on the arm to an angle of 45° by means of the machine, it will take some time before the same degree can be reached by the use of the hand alone, without the employment of excessive force, and a little longer before the patient can voluntarily perform the same motion. We may take, as an example of this treatment, a case in which the elbow has been affected with arthritis, and where for thirty days it has continued inflamed and motionless. Numerous careful and reiterated efforts will be required to restore mobility in such a case; for not only is the resistance great owing to plastic exudation and newly-formed fibrous tissue, but the surgeon cannot, without great risk, exceed the

point already mentioned in exercising the joint; he must perform, indeed, only such graduated, well calculated, slow, yet powerful motions, as can be arrested or increased at will. For such a case treatment by a carefully constructed machine is indispensable.

Summary.—Where our object is to restore the normal mobility of a joint, we may move the segments of the limb to the fullest extent, and cure the patient in a single sitting, for which purpose machines are rarely required; or we may execute the motions slowly, gradually, and certainly, for which purpose machines are indispensable, as it is only by their use that we can combine great force and extreme precision together. After a month or six weeks, in cases of stiff knee or shoulder from immobility, we may employ the former method; at a later period, or where there has been arthritis, we must depend on the latter; lastly, where there is still pain at the points already mentioned, we must not commence till it has disappeared, and the best way to hasten this result is to immobilise the limb in a good position. Extensive movements produce, in favorable cases, brilliant effects. Let it be a precept in the radical cure to carry the movements to their utmost limit. Malgaigne treated a friend for acute hyarthrosis; he had certain movements performed, the joint recovered its functions, and he considered him cured; nevertheless the patient continued to limp, and consulted the author again in a few days; the knee was healthy, flexion extensive, though not complete. Malgaigne carried it to its greatest degree, till the heel touched the buttock; the limping instantly disappeared, and the patient was perfectly and permanently cured.

Application to each joint.—Malgaigne explains the application of these principles separately to each joint. In stiff fingers, treatment by special machines is rarely required. The surgeon must first attend to the metacarpo-phalangeal articulation; he takes the finger in his hand, and exercises sufficient traction to elongate the ligaments, and at the same time cause flexion. "To what extent should the flexion be carried? It is evident that the surgeon has sufficient force to overcome all resistance at once, but it is equally certain that arthritis would be the result. The pain excited by even moderate flexion is atrocious, much more severe than that of an amputation; yet I do not employ chloroform, for I am guided by the degree of pain, and the patient prevents my passing beyond the limits of really curative motion. This fact has not been published, and is known to very few; yet you may take it as an absolute rule. I seize then the diseased joint, and bend it till the pain can no longer be endured. You may rest easy that no patient will let you go too far, for even the most courageous man yields to the agony. You stop for a few minutes; you ask whether the pain persists, whether it increases or diminishes. If the latter, you may flex a little more, but you stop as soon as the patient again exclaims; should then the pain last for more than a minute, you should conclude the sitting." Should the pain persist or increase, you must keep the hand at rest till it has ceased. You may then again flex the finger, following the same plan, and thus you may gradually progress, step by step, to complete flexion. After a time the patient himself should occasionally repeat the same motions. Recovery is often promoted by the retention of the finger in

a flexed position, for an hour or two at a time, by means of a ribbon or bandage. The treatment must be carried out in a similar manner in the other joints. In respect to the hip, however, a good position is all that can generally be achieved. Only in rare cases can mobility be restored.

The careful performance of the natural movements should be commenced five or six days after the reduction of a dislocated elbow, and twelve days after that of the shoulder. Similar treatment must be employed after fractures into the joints, as after fractures with dislocation of the elbow, or comminuted fractures of the head of the humerus.

Considerable mobility may sometimes be gained in cases of unreduced luxation. Malgaigne relates the case of a child of two years, who had a dislocation of the upper end of the radius forwards. Reduction could not be effected. He set the mother to work; in two months flexion was complete. In an adult affected with the same dislocation, flexion, though not perfect, became sufficient to allow the patient to shave himself. He has also seen a case of unreduced luxation of the elbow, in which the patient could almost perfectly extend the forearm, and flex it enough to touch his nose with his hand, when the head was slightly inclined.

On certain grave evils attending tenotomy, and on a new method of curing deformities of the foot, by R. Barwell ('Med.-Chir. Trans.,' vol. xlv, p. 25).—The author is of opinion that the subcutaneous division of tendons and muscles frequently produces lameness, less apparent, perhaps, but certainly more incurable, than the original disease.

"In the purely mechanical treatment of distorted foot from excessive muscular contraction, which the use of the tenotome has superseded, it was found that the mere *lateral* twist could be overcome without any great difficulty, while the most obstinate distortion was the exaggerated extension of the part. The *pes equinus* could hardly ever be cured; *equino varus* was, *cæteris paribus*, obstinate in a direct proportion to the amount of the extension. That is to say, the difficulty of overcoming a contracted muscle is, other things being equal, in a direct ratio with its size and strength.

"At the present time the treatment of *pes equinus* is, above all others, simple in its performance and happy in its results. The restoration of all those other deformities in which extension mingles is also greatly assisted by annihilating that over-action of the gastrocnemius, to which much of the inward twist of the foot in *equino-varus* is attributable. But this last-named deformity is now treated by division of four tendons, at least—the *tibialis posticus*, the *flexor longus digitorum*, the *tibialis anticus*, and the *tendo Achillis*, and frequently also of the *plantar fascia*. A very similar treatment is inflicted on *valgus*. 'The *peronei* tendons are to be divided, or together with them those of the *extensor longus digitorum* and the *tendo Achillis*, and also those of the *tibialis anticus* and *extensor proprius pollicis*.' Can we be surprised that after this 'there is difficulty in continuing efficient support to the arch of the foot; and even after the arch has been restored, support is required during many months'?

"But, besides the cases which arise from excessive action in one set of muscles, there are others which have their origin in partial or total

paralysis or in debility of certain other muscles. If, in such instances, it be endeavoured to restore the balance of the limb by dividing the tendons of the still active muscles, the consequences are very disastrous; but even orthopædists do not often now, I believe, tenotomize such cases, although no more efficient apparatus than the old jointed iron and Scarpa's shoe appears to be employed in that special practice.

"Now, the difficulty of overcoming a contracted muscle being, as I have already remarked, in exact proportion to its strength, it follows that it is most difficult, or indeed, all but impossible, to overcome the sural muscles, those attached to the tendo Achillis. Hence division of that tendon is a most valuable, an all but indispensable, resource in all deformities of the equinal or extended varieties; and it happens that the tendon is so situated and surrounded, that not only is its division, but also its reunion, extremely easy. So remarkably is this the case, that it requires a diligent application of ignorant management to produce a non-union of this tendon. But are the other tendons, whose section is so constantly performed, thus easily reunited? This question occurred to me rather more than four years ago, when I was struck by observing on a patient, who had long before been freely tenotomized *secundum artem*, that several movements of his foot were very feeble and uncertain. Since then it has fallen to my lot to see several feet in the same circumstances, both as to apparent cause and effect, but the full solution of the question only presented itself about a year ago."

After referring to some experiments on dogs by M. Bouvier, the author continues:—"It may easily be averred that experiments on animals cannot be relied on as proof of what happens in man. Post-mortem examinations after tenotomy, moreover, are not common; but Mr. William Adams has been able to gather together, in his book on the 'Reparative Process in Human Tendon,' the results of thirteen autopsies. In this number there are six in which the tendo Achillis only was divided, a tendon which should never do badly. There are, therefore, seven cases in which other tendons were also divided and in every one of them one or more of the severed tendons is either not united at all or is adherent to the bone or surrounding parts, so as to abolish the action of the muscle. In no one instance, in which the tibialis posticus and flexor longus digitorum, one or both, were divided, did they so unite as to be of the slightest use, while the tibialis anticus is more exposed to extinction by non-union than by false union. Now, these are the only accounts of examination in the human body of the actual effects of tenotomy upon tendons other than the tendo Achillis. The results are confirmed by experiment. What conclusion is to be drawn from them but that such muscles as the tibialis posticus, flexor longus digitorum, and probably also the peronei (which are similarly placed behind the leg-bones), might as well be struck with sudden and irremediable paralysis as be subjected to the knife of the tenotomist; and that, moreover, other tendons—those in front of the foot—are only a little better off in this particular? Under such circumstances the phrase made use of at the commencement of this paper—that tenotomy frequently produces lameness, less apparent, perhaps, but certainly more incurable, than the original disease—is, I hold, fully justified."

To the question whether most cases—in fact, nearly every case—of talipes cannot be reduced without division of the tendons in question, Mr. Barwell replies, “We may not have quite sufficient data at present to determine the exact proportion, but at all events we have sufficient to show that, under the circumstances which I have endeavoured to portray, the tendons in question should never be divided, except in the very rare cases in which *no other* means will succeed in reducing the deformity. Therefore we must return to mechanical treatment for the elongation of those muscles whose size renders this possible, and which have tendons so placed as to cause their section to be destructive of muscular action.

“All the best forms of instrument hitherto invented act on the principle of confining the foot in a shoe or *sabot*, which, by springs of various shapes and materials, bend or twist the limb in a direction contrary to that of the deformity. There are several grave objections to the application of force through the medium of a shoe—the impediment thrown in the way of walking, the pressure on the limb, &c. But the greatest inherent and insurmountable defect is that the antagonistic force is not applied in the delicate and discriminative manner employed by nature; the foot is treated as a clumsy whole, to be twisted inward or outward upon a stiff turnboard, to which it is bound for the purpose.”

Mr. Barwell explains his plan of treatment in the following manner:—“In fact, however, when any of these constituents change their position, and thus the whole foot its form, the only rational indication is to use some means of supplying the overbalanced muscular power *in its proper place and direction*, until the organs themselves regain their due force; and this latter can only take place when *the foot is allowed its liberty*. I believe myself to have fulfilled these indications by the following method, which, though simple in itself, is difficult to describe. The only necessary apparatus is strapping-plaster;* a piece of tinned iron about an inch broad, as long as the patient’s leg, and provided at its upper end with a wire loop; a few india-rubber springs of one-quarter-inch cord of various lengths, and furnished at each end with a steel hook; and some eyelets, with the pincers for fixing them.

“First, a piece of the plaster is cut into a trapezoid form, in such wise that its broadest part, adherent to the sole and side of the foot, shall follow with considerable accuracy the course and insertion of the weakened tendon. The narrower part shall lie on the side of the foot, a little before or behind one or other of the malleoli, as the case may be; it is not to adhere, but to be folded on itself with the sticky sides together, and through the double thickness an eyelet must be inserted. The foot must now be held by an assistant as nearly as possible in the normal position, and be evenly strapped from the toes backward, leaving out the ends into which the eyelets are driven. By these first-named pieces of strapping the insertion of the muscle or muscles is represented.

“We now turn to the *leg*. A piece of strapping rather broader than

* Emplastrum resine, spread on stout twilled calico.

the tin, and three times as long, is made to adhere over the defective muscle, from its origin to just above the ankle-joint, the superabundant length hanging loose below. Over the plaster which covers the muscle is placed the piece of tin, roughly moulded to fit the surface, and padded at its lower end with a little cotton-wool. The additional length of strapping is next turned upward over the tin. The leg is then to be smoothly strapped, in continuation with the circular strapping on the foot, from the ankle to just beyond the other end of the tin, care being taken to leave the wire loop uncovered. There is still an additional length of longitudinal plaster, which, for security, may be brought down and made to adhere outside the circular pieces. Now, it will have been perceived that the arrangement of the longitudinal piece of strapping is as follows:—it first adheres to the skin of the leg, then forms a loop, sustaining the lower end of the tin; thence it runs up with its sticky side outwards and adherent to the inside of the surrounding strips; lastly, for more security, it turns down over the last circular piece, its inner side adhering to the outer surface of those strips. Thus we have at the upper part of the leg a fixed point, the wire eye supported through the medium of the tin by a loop of plaster, which takes its bearing in such a manner that no constriction of the limb can be produced, whatever downward force be exerted upon the wire. Now, it is only necessary to choose an india-rubber spring of such a length as to produce the right amount of tension, and to fix one of its hooks in the wire loop, and the other in the eyelet which was let into the plaster on the foot.

“By tension of this india-rubber we can assist any one muscle or muscles in their action on the foot, making them adapt themselves to a normal posture in an active condition. If we wish to supply two muscles, *e.g.* the tibialis posticus and anticus, two tins and two wire loops are as easily fixed as one. But a little difference must be observed in supplying the peroneus longus and brevis. These run so equally and closely on the leg that one wire loop suffices for both; but below the fibula they make a bend of a little more than a right angle, and we cannot, as is the case with other and less crooked tendons, produce the necessary change in the direction of the force by the trapezoid shape and the adhesiveness of the strapping. That which represents these tendons must be laid on the outside of the foot, nearly as far forward as the root of the toes, and to its eyelet must be fixed a piece of catgut, which in passing to the spring runs through a little metal block, thus constructed. An eyelet is nipped by the proper pliers as though for fixing it, but without fastening it to anything; this is to act as a pulley. It is tied, not too tightly, by a piece of wire to a hole at the lowest part of the front edge of the tin. Of course, the catgut running through this barren eyelet bends at an angle which can be made precisely to imitate that of the tendon. In these cases the tin should be passed into a slit in a piece of the strapping going round the leg, so as resist the slight tendency forward.

“A case of varus is to be treated by supplying force to the two peronci muscles; it is better to use a spring for each muscle, and the amount of traction should be distributed between them, until the due

balance is obtained. On the other hand, valgus is treated by giving greater effect to the anterior and posterior tibials; in severe cases to both, in milder cases to the former only. Two tins and two wire loops should be used, except in the case of infants, when one tin, broader above than below, and one broad loop, will suffice. The common and very inconvenient deformity called flat foot may be conquered in a week or two by supplying power to the tibialis anticus, and the treatment relieves the patient of pain so completely that one who limps to the surgeon will walk away upright and freely. Nothing has struck me with greater astonishment than to observe that tenotomists counsel the division of this tendon; for this muscle, above all others, is that which, by lifting the inner cuneiform and metatarsal bones from the ground, keeps up the arch of the foot, and aids in preventing the outward twist of valgus, which is always more or less present in flat-foot. One reads in books that this painful affection is produced by relaxation of the ligaments, although it is well known that the ligaments are merely secondary assistants to the muscles, and that their yielding is only an effect, and not a cause. Even the elongation of the plantar fascia is in these cases simply a sequence of muscular debility.

"In equino-varus or equino-valgus, it may be necessary to divide the tendo Achillis, but only when the extension is severe and well marked; otherwise the treatment should be undertaken for the other tendons, as though no equinal deformity were present.

"In treating an infant, very little force is required, certainly less than when a *sabot* is used, since it is applied in the normal direction. During the first few hours, it is well to apply less force than is intended to be used in the subsequent treatment. I have never found the amount of pressure influence the growth of the bones. If the child be old enough to walk, he should be encouraged to do so as soon as the treatment begins to have any effect on the posture of the limb; since the weight of the body will then aid in the cure. This is further advisable for the following reasons. When deformities are treated by irons and shoes, which confine the bones of the foot, the muscles remain inactive, and merely contract to their new position in a passive manner; such distortions, when the limb is again used, are very apt to return. To combine exercise with the treatment above indicated increases the muscles; they accustom themselves to activity in their new relations; when the apparatus is discontinued, the deformity has no tendency to return. Lastly, the faulty posture must be somewhat reversed, and the patient encouraged to walk with the foot in its new position before the treatment is finally abandoned."

Mr. Brodhurst, in describing the *treatment of spinal curvature* ('Brit. Med. Journ.,' 1864, i, 253), demonstrates the necessity of attending to the cause, and modifying the mechanical means accordingly. "The treatment of spinal curvature must vary as the cause which induced it varies. Unfortunately for orthopædic surgery, it has been too much the habit to treat every form of spinal curvature, whether induced by immoderate use of an upper extremity or by deficient length of a lower extremity or by thoracic disease or other cause, after the same fashion;

to ignore the cause, in fact; and to treat the affection entirely irrespective of cause and position, so that—whether the curve be primary or consecutive—whether it depend on affection of a lower extremity, or on the use of an upper extremity, the dorsal curve is treated without reference to cause or consequences, without knowledge; and, I might say, without honesty, until it has become matter of doubt, among members of the profession even, whether spinal curvature is curable.

“Spinal curvature is curable, but only when all the circumstances which gave rise to it are taken into consideration.

“In Lecture IV an instance of spinal curvature is represented in fig. 6, which is a sigmoid curve, consisting of a primary lumbar curve and a consecutive dorsal curve; and the cause of the lumbar curve is obliquity of the pelvis, occasioned by genu valgum. The ordinary treatment of such a case would consist of a spinal instrument to act on the convexity of the dorsal curve, with, perhaps, a second plate to act on the lumbar curve. Let no one suppose, however, that such treatment would be effectual to remove the spinal distortion. Not only would it not be removed, but distortion would increase, notwithstanding that the spinal instrument might be worn so long as the cause remained. The treatment should first be directed to the cause of curvature, namely, to the knee. For until the inversion of the knee is removed, the spinal distortion must remain. In this instance the treatment was as follows. An apparatus was applied to the leg to restore the straight line of the limb, the recumbent position was much observed, and slight pressure was made on the lower part of the lumbar curve, while the dorsal curve was supported.

“Again, fig. 7 illustrates a case in which the pelvis was rendered oblique through standing much on one foot, and where, consequently, was developed a strongly marked lumbar curve, which was compensated by a dorsal curve. In this instance, as in the last, it was necessary first to remove the cause by obliging the patient to recline in a spinal chair during several hours in the day. When this first point had been accomplished, the removal of the lumbar curve was easy; and, as would be expected, the dorsal or compensating curve was removed even before the primary curve. Thus the recumbent posture must be considered a very important adjunct to other and more direct treatment in all those cases which depend primarily on affections of the lower extremities.

“The cause of lateral curvature is rarely to be found in the spine itself. Generally it must be sought for remotely; or the cause may be, as it often is, general debility, when the spine partakes with the rest of the organism.

“Nothing has been more abused than the mechanical treatment of spinal curvature. Let the case be curable or incurable, and let distortion arise from whatever cause, the treatment in each instance has been the same. Common sense alone would indicate that, in the treatment of spinal curvature, the primary curve should first be acted on; and, further, that it is of little use to act on this primary curve without first attending to the cause which gave rise to the curvature.”

M. Malgaigne, lectures on orthopædic surgery (pp. 434, Paris, A. Delahaye). E. J. Chance, on the nature, &c., of bodily deformities, (part i, pp. 304, Lond., Lemare). R. Barwell, on the cure of club-foot without cutting tendons, &c. (Lond., Churchill). B. E. Brodhurst, on orthopædic surgery ('Brit. Med. Journ.,' 1863, ii, 463, &c.). Dr. Little, on the influence of parturition, &c. ('Obstet. Trans.,' iii, 293). J. Wildberger, practical experience in orthopædic surgery (pp. 300, Leipz., Weigel). F. Le Gros Clark ('Med. Tim. and Gaz.,' 1863, ii, 83). Dr. Eulenburg ('Arch. f. Klin. Chir.,' iv, 301). M. Morel-Lavallée, coxalgia as a cause of congenital dislocation ('Schmidt's Jahrb.,' vol. 115, p. 57). C. F. Taylor, infantile paralysis ('Amer. Med. Tim.,' 1862, ii, 187, 215). M. Jobert, section of the clavicular portion of the sterno-mastoid ('Gaz. d'Hôp.,' 1863, p. 314). L. Voigt, case of congenital absence of the radius ('Arch. d. Heilk.,' 1863, p. 27). H. W. Berend, diffuse aneurism from a wound of the posterior tibial in division of the tendo Achillis ('Wien. Med. Halle,' 1863, p. 331). Dr. Hueter, on genu valgum ('Arch. f. Klin.,' Chir. ii, 622); and on the etiology of club foot (ib., iv, 125).

REPORT
ON
MIDWIFERY AND THE DISEASES OF WOMEN
AND CHILDREN.

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LITERATURE.

MIDWIFERY.

IN America, Dr. Bedford's work on the 'Principles and Practice of Obstetrics' has reached a third edition (New York, Wood).

IN France, Delattre has published a 'Practical Treatise on Midwifery, and the Diseases of Women and Children' (Brest, Roger). The sixth edition of Cazeaux's 'Midwifery' has been published (Paris), and we notice a thesis by Bruneau, on 'Fibrous Tumours of the Pelvis as a Cause of Dystocia' (Strasbourg, Christophe), and by Nivert on 'Cephalic Version by External Manipulation in Abnormal Presentations of the Fœtus' (Paris, Coccoz).

IN Germany, Prof. Grenser publishes a 'Manual of Midwifery' (Leipsic, Hirzel).

IN this country, "The Obstetrical Society of London" publishes the fourth volume of its 'Transactions,' containing forty-one articles on some of the principal subjects in obstetric medicine and surgery (London, Longmans).

DISEASES OF WOMEN.

IN France, Tardieu publishes an able treatise 'On the Medico-Legal Study of Abortion' (Paris, J. B. Baillière).

IN Germany, Prof. Braun publishes a 'Manual of Diseases of Women' (Vienna, Braumüller). Prof. Scanzoni has published a treatise on 'Chronic Metritis,' and dedicated it to the Obstetrical Society of London (Vienna, Seidel). Prof. Luschka brings out a work on 'The Anatomy of the Human Breast' (Tübingen, Laupp), being another of

his series of anatomical essays, written with especial reference to the requirements of practical medicine.

MM. Bernutz and Goupil publish the second volume of their 'Medical Clinique on the Diseases of Women.'

In our own country, we notice the following:

Dr. Graily Hewitt, on 'The Diseases of Women' (London, Longmans).

Dr. McClintock, 'Clinical Memoirs on Diseases of Women' (Dublin, Fannin).

Dr. Churchill, on 'Diseases of Women,' fifth edition (Dublin, Fannin).

Mr. Baker Brown, on 'Ovarian Dropsy' (London, Churchill).

Dr. Mackenzie, 'On the Pathology and Treatment of Phlegmasia Dolens' (London, Churchill).

Dr. Savage, 'A Series of Plates, illustrating the Surgery of the Female Pelvic Organs' (London, Churchill).

Dr. Tilt, 'A Handbook of Uterine Therapeutics,' and the third edition of the same author's work on 'Uterine and Ovarian Inflammation' (London, Churchill).

Dr. Uvedale West, 'Illustrations of Puerperal Diseases,' second edition (London, Churchill).

Dr. Swayne, 'Obstetric Aphorisms,' third edition (London, Churchill), and 'The Annual Address in Midwifery of the British Medical Association.'

We may mention also the following pamphlets as specially worthy of notice:

Dr. Tanner, on 'Cancer of the Female Sexual Organs' (London, Renshaw). Dr. Tuckwell, on 'Effusions of Blood in the Neighbourhood of the Uterus' (London, J. Parker). Dr. Chapman, on 'Functional Diseases of Women' (London, Trübner).

DISEASES OF CHILDREN.

In America, the third edition of Dr. Meig's work on 'Diseases of Children' is published.

Prof. Jacobs publishes a course of lectures on 'Dentition and its Derangements' (New York, Baillière).

Dr. Bodenheimer has written a practical treatise 'On the Ætiology, Pathology, and Treatment of the Congenital Malformations of the Rectum and Anus' (New York, Baillière).

In France, Prof. Bouchut has published the second edition of his work on 'Diseases of Infants,' and also a work on 'The Hygiene of the First Period of Childhood' (Paris, Baillière).

Dr. Seux, 'Researches on the Diseases of New-born Children' (Paris, Baillière).

In Germany, Dr. Stiebel publishes a treatise on 'Rachitis' (Erlangen). A treatise by Dr. Widerhofer on the 'Diseases of the Umbilicus in New-born Children' (Vienna, Anst). Dr. Lang, a pamphlet on the 'Acute Catarrh of the Intestinal Tract in Infants' (Schaffhausen, Brodtmann).

In our own country, Mr. Bryant has published his Lettsonian Lectures on the 'Surgical Diseases of Children' (London, Churchill).

Dr. Routh has published the second edition of his work on 'Infant Feeding, and its Influence on Life' (London, Churchill).

Among pamphlets, we notice Dr. Meadows has translated Dr. Rogers's treatise on 'Auscultation of the Head' (London, Renshaw).

STATISTICS, ETC.

Dr. Steele.—'The Annual Medical Report of Guy's Hospital' for 1862, contains a special account of the Lying-in Charity, of which the following is a summary (Mr. Doig, 'Med. Times and Gaz.,' vol. i, p. 419, 1863):—"The patients are attended by the pupils of the hospital, under the immediate superintendence of the two obstetric physicians. Two of the senior pupils are in constant residence for two months at a time, to keep the records and to attend cases of urgency, as well as to direct the junior pupils in cases of doubt or difficulty. The records of this department of the hospital have been always carefully kept, and the small rate of mortality attending its operations is a sufficient criterion of its administrative success. The charity is entirely confined to the south side of the river, and embraces a densely populated neighbourhood of considerable extent. Taking the hospital as a centre, its radius extends two miles in every direction—from Lambeth Walk on the west to Rotherhithe on the east, while the High Street of the Borough forms the central line, and subdivides the area into two nearly equal parts."

The total number of labours which occurred during the years 1854, 1856, and 1861, was 5254, of which there were 1738 during the year 1854, 2011 during 1856, and 1505 during 1861. Of the 5254 women delivered, 810 were primiparæ and 4444 were multiparæ. The total number of children born was 5310.

	Single.	Twin.	Triplet.
Of 1755 births during 1854, there were . . .	1721	17	—
2028 " " 1856, " " . . .	1994	17	—
1527 " " 1861, " " . . .	1485	18	2
<hr/> 5310	<hr/> 5200	<hr/> 52	<hr/> 2

Hence twins happened once in about 101 labours, while triple occurred only once in 2627 deliveries.

Births.	Alive.	Male.	Female.	Stillborn.	Male.	Fem.	Abortions.	Monsters.
Of the 1755	1680	869	811	66	36	30	8	1
2028	1932	1019	913	96	57	39
1527	1476	1753	723	51	27	24
<hr/> 5310	<hr/> 5088	<hr/> 2641	<hr/> 2447	<hr/> 213	<hr/> 120	<hr/> 93	<hr/> 8	<hr/> 1

The number of still-births among the males is greater than among the females, being in the former nearly 1 in 23, in the latter 1 in 27; the total number of still-births, excluding abortions and monsters, was nearly 1 in 25.

The following were the presentations in 5310 births :

	Births.	Normal.	Abnormal.	Breech.	Arm.	Funis.	Face.	Footling.	Transverse.	Placental.
Of the	1755	1707	48	20	6	2	3	15	2	...
" "	2028	1964	64	23	10	3	6	20	...	2
" "	1527	1474	53	24	4	4	8	11	1	1
	<u>5310</u>	<u>5145</u>	<u>165</u>	<u>67</u>	<u>20</u>	<u>9</u>	<u>17</u>	<u>46</u>	<u>3</u>	<u>3</u>

Hence abnormal presentations occurred once in about 32 labours ; breech, nearly 1 in 79 ; arm, 1 in 265 ; funis, 1 in 590 ; face, 1 in 312 ; footling, 1 in nearly 115 ; transverse, 1 in 1770 ; and placental, also 1 in 1770 deliveries.

Of the 5254 women in labour, 19 died, or 1 in 276.5 cases ; and the mortality was due to the following causes :—

Three died from exhaustion after hæmorrhage, 3 from peritonitis, 3 from convulsions, and 1 from each of the following causes—rupture of the uterus ; laceration of the cervix ; metritis ; phthisis ; fever ; cholera ; pneumonia, complicated with erysipelas ; Bright's disease ; acute rheumatism ; and uræmia.

Dr. S. Lawrence (Montrose), "A Statistical Report of One Thousand Midwifery Cases" ('Edinb. Med. Journ.,' February and March, 1863). The author insists on the importance of collecting accurate statistics of midwifery in private practice. In the above number are included all cases of birth occurring after the period of quickening, 32 children having been born abortive or premature, of whom 18 were dead and 14 living. Of the 1000 women, 220 were primiparæ and 780 multiparæ. The number of children born was 1017 (there being 17 cases of twins), of whom 553 were males and 464 females. Five mothers died, and of these, 2 were previously in a feeble state of health. Of the children, 45 mature and immature were born dead. The number of tedious or difficult labours was 83. Delivery was accomplished by the forceps in 28 cases ; there were 34 cases of abnormal presentation, and labour was complicated in 21 cases.

(1) Of the 83 tedious and difficult cases, 38 were primiparæ, or 1 to 5 ; and 45 were multiparæ, or 1 to 17. Feeble uterine action, or this with rigidity of the soft parts, occurred in about 1 of every 6 primiparæ, in 1 of every 21 multiparæ. Of the 83 cases, delivery was accomplished naturally—*i.e.* without either medicinal or mechanical aid—in 21 ; by the forceps in 28 ; ergot was given in 37 cases (always in the second stage, and in infusion) ; in 19 "with apparent benefit ;" in 18 "with no perceptible effect ;" in 5 cases the tincture of Indian hemp was given, "by way of testing its powers as a uterine stimulant," in 2 cases "with seeming benefit, in 3 with none." (2) Of the 28 forceps cases, 21 were primiparæ, or 1 to 10 ; and 7 were multiparæ, or 1 to 111. Of the mothers in these 28 cases, all recovered but one, who died from uterine phlebitis, after a very severe labour from contracted pelvis ; in the great majority the recovery was as rapid as in ordinary cases. Of the children, 4 were born dead and 24 alive. An earlier use of the

forceps would, in the author's opinion, have saved three. In opposition to the opinion of Dr. Murphy, who thinks "that, so far as children are concerned in protracted labour, the proportion of stillborn is very much the same, whether the forceps be employed or not," the author believes that many more children might be saved by their timely use; and, in support of this proposition, compares the practice of Dr. Hamilton, of Falkirk, who holds the same view, with that of the Dublin Lying-in Hospital (in 1848), where the opposite prevailed.

Of 731 labours, Dr. Hamilton employed the forceps in 90 cases, or 1 to 8, and in all these cases the children were born alive. Drs. Hardy and McClintock relate 18 forceps cases in 6634 labours, being 1 to 368.5 cases. Of these 18 cases, the mothers died in 5 and the children in 8.

The author's own experience is directly corroborative of the opinion he advances. In the first 500 cases he used the forceps in 8 cases, and in 4 of these the children were born dead; in the last 500 he used them in 20 cases, and in all of these the children were born alive. Hence he believes that, in considering the indications for the use of the forceps, *the danger to the child from protracted labour* is not dwelt upon with the force and emphasis it deserves.

In all the forceps cases, with one exception, chloroform was administered, the author's experience in this being directly opposed to the opinion of Dr. Meigs, "that the patient's retention of sensibility to pain is an important means of securing her safety in the use of this instrument."

In operative cases the author has had the best proof of the perfect safety and great advantage of chloroform; but in ordinary cases of labour he has so frequently found it retard, or even suspend, uterine action altogether, that he now never administers it in such cases, unless pressed by the patient to do so, and then only towards the close of the expulsive pains.

(3) Of the 34 cases of "abnormal presentations," excluding 3 cases (2 breech and 1 footling), there occurred 9 breech, 4 footling, 2 arm, 5 of the funis, 1 of the face, and 10 of the face to pubis.

Of the 31 cases, 8 were primiparæ, or 1 to 27.5; and 23 non-primiparæ, or 1 to 33.9.

Of the cases in which the presentation involved danger to the child from pressure on the cord, 6 were primiparæ and 14 multiparæ; of the 9 breech cases, 6 of the children were born alive and 3 dead. In all the cases the breech was allowed to pass before any efforts were made to aid delivery.

Of the 4 footling cases, 3 of the children died and 1 was born alive. In both the arm cases turning was performed under chloroform by means of one foot, and both children were saved, though both were at first asphyxiated. Of the 5 funis cases, 3 of the children died and 2 were saved; version performed in 2 cases, and the funis pushed up into the uterus in 2 cases.

In the face presentation delivery was not long delayed. Of the 10 cases of face to pubis the labour was tedious, and in 2 the forceps were required. (4) The 21 cases of "complicated labour" include 3 of

puerperal convulsions, 7 of ante-partum hæmorrhage, and 1 of post-partum, 7 of retained placenta, 2 of syncope after delivery, and 1 monster. Eight of these occurred in primiparæ and 13 in multiparæ.

The 3 cases of convulsions were all primiparæ, and all recovered; in 1 case twins were delivered alive by the forceps; in each of the cases venesection was employed.

Of the 7 cases of ante-partum hæmorrhage, 5 occurred at the full time and 2 prematurely; 2 were primiparæ, and 5 multiparæ. All the mothers recovered, but only one of the children was saved; in 2 of the cases version was performed, the rest were left to nature after the membranes were ruptured.

In the single case of post-partum hæmorrhage the latter was arrested by pressure and cold. Of the 7 cases of retained placenta, the retention was due to inertia of the uterus in 6, and in 1 to hour-glass contraction. In the latter case the placenta was very friable, and broke down during removal. Some small pieces were thus left in the uterus, and, as the patient was much exhausted, it was not deemed prudent to attempt their extraction. Irritative fever and other symptoms of uterine phlebitis resulted, and the patient died on the eleventh day. In all such cases the author recommends *immediate* removal of every part of the broken placenta, if possible; but if, from hæmorrhage or exhaustion, this be inexpedient, stimulants and ergot should be administered, and, if necessary, after waiting a few hours, the patient should be put under chloroform, and the removal of every portion of the placenta be now effected by the reintroduction of the hand into the uterus. The author believes *that the risk, both of post-partum hæmorrhage and of retained placenta, whether from inertia or irregular contraction, is directly as the time which elapses between the birth of the child and the expulsion of the placenta, and that any line of practice, otherwise unobjectionable, tending to secure the expulsion of the afterbirth within ten or fifteen minutes from the time of the woman's delivery, will reduce to a minimum the chance of such contingencies.*

The following simple and most valuable rule is recommended by the author as the best mode of lessening the chance of post-partum hæmorrhage. After the birth and separation of the child, let the funis be held with the right hand, and maintained tense, *without, however, any dragging*, and let the left hand at the same time grasp the fundus and body of the uterus through the abdominal parietes, and thus keep up steady pressure until the placenta is expelled.

Two cases of syncope followed delivery; in both, recovery resulted from the use of stimulants and pressure over the uterus.

(5) There were 17 twin cases—3 were primiparæ and 14 non-primiparæ. In 7 cases both children presented naturally; in 10 one of the children presented abnormally, and this happened, with only one exception, with the *second* child. The shortest interval between the birth of the children was five minutes, the longest three and a half hours. In each of the 3 primiparæ the co-twins were males. All the mothers recovered well, and of the children all were born alive, with the exception of one dead before birth.

(6) Of the 5 mothers who died (1 primipara, 4 multiparæ), 3 were from puerperal peritonitis and 2 from uterine phlebitis.

(7) Of the 45 children born dead, 20 were primiparous and 25 multiparous. In 18 cases the children were premature—5 primiparous, 13 multiparous. Of the 27 at full time, 15 were primiparous and 12 multiparous. Of the 15 primiparous, 7 were dead before labour commenced and 8 died during labour. Hence the danger to the child is nearly three times as great in a first *pregnancy* as in subsequent ones, and nearly five times as great in a first *labour*. But the ratio of mortality from pressure on the head of the child during labour was in primiparæ 1 to 73, while in multiparæ it was 1 to 780. Can anything be done to prevent or diminish this excess of infant mortality in first labours? The author is convinced that the true answer to this is, that in all difficult or tedious cases we ought to employ the forceps much sooner in primiparous than in non-primiparous ones, if we would give our patient an equal chance of having a living child.

A comparison of the above statistics with those of large lying-in hospitals is instructive, as showing a far greater liability to diseases of the puerperal state, and hence a much higher rate of mortality in the latter institutions. Prof. Hecker states, in his 'Clinical Report of the Lying-in Hospital at Munich' for the year ending October, 1862 ('Mon. f. Geb.,' p. 395, May, 1863), that of 913 deliveries (304 primiparæ, 609 multiparæ), 186 women "fell ill," but of these 44 suffered from slight maladies; of these, 122 recovered, 7 died, and 57 were transferred to another hospital, of whom 32 recovered and 25 died, giving a general mortality of 3.6 per cent. Of the labours, 85 were premature, and 828 at full term; 928 children were born (twins in 15 cases), of whom 18 died before and 20 during birth. The operations were as follows:—Podalic version, 9 cases; extraction, 16 cases (in 7 after version); forceps, 21 cases; Cæsarean section, once; reposition of prolapsed funis, once; of prolapsed arm, 3 cases; removal of the placenta, 3 cases. The funis prolapsed in 3 cases of head presentation (in 2 the children were saved, in one case by reposition, in the other by extraction with the forceps; in a third case the foetal heart was heard 20 hours after reposition of the funis, but the child was born asphyxiated); in 4 cases with pelvis and cross presentations (all the children born dead). Partial placenta prævia occurred in two primiparæ, with, in both cases, cessation of the hæmorrhage after rupture of the membranes and the birth of dead premature children. Hæmorrhage, post-partum, occurred in 13 cases, but with no fatal result. In 32 cases rupture of the perinæum occurred (27 primiparæ, 5 multiparæ), but in no case did the laceration involve the sphincter ani. A complete cure was obtained by primary union in 17 cases, in 8 a partial cure, the remaining 7 were discharged uncured. The indications for the forceps—employed in 13 primiparæ and 8 multiparæ—were, contraction of the pelvis, 2 cases; abnormal position of the head, 4 cases; abnormal relation between head and pelvis, 2 cases; prolapse of the funis, 3 cases; atony of the uterus, long duration of the expulsive pains, and danger to

the life of the child, 10 cases; 17 living and 4 dead children were thus delivered.

Of 304 primiparae, 66 fell ill, and 15 died, or 22·7 per cent.; of 609 multiparae, 76 fell ill, and 17 died, or 22·3 per cent.

The author thinks that the cause of this great disproportion is the much greater length of the labour in primiparae, and hence the greater pressure on the soft parts. Of the 142 cases, 45 were injured during the labour, either by natural or artificial delivery. Of the children, about 22 per cent. died from diseases very similar to puerperal fever; and as if to show the subtle influence of this miasma, a series of children of healthy women quickly died from diseases of the lowest type, general septicæmia, septic peritonitis, &c. Prof. Hecker believes that the opening of the hospital for the instruction of the students during the summer session, and for the midwifery pupils during the three following months, cannot have exercised any influence upon the origin and communication of the disease, for the arrest of which the most careful hygienic measures were adopted.

GENERAL ANATOMY AND PHYSIOLOGY.

Prof. Kussmaul reviews the question of the transmigration of the ovum ("Further Contributions to the Knowledge of the Transmigration of the Human Ovum," ('Mon. f. Geburt,' October, 1862, and 'Brit. and For. Med.-Chir. Rev.,' January, 1863). The following case is first related. After suffering from acute pains in the abdomen and chest, with hæmorrhage from the vagina, for a fortnight, a woman died in a state of collapse. After death a large quantity of blood was found in the abdominal cavity; the uterus, pear-shaped, was enlarged; the cavity was lined with decidua, terminating at the os internum and at the Fallopian tubes; the anterior aspect and both sides of the uterus were covered with stringy growths of cellular tissue; the *left* ovary, very large, was close to the uterus; both surfaces were covered with stringy growths of cellular tissue; thin strong threads ran from the outer side of this ovary to the extremity of the Fallopian tube; a well-developed corpus luteum existed in the outer part; the left Fallopian tube, with the broad ligament, showed long and short free-hanging threads of cellular tissue. The *right* ovary had no corpus luteum, but was also covered with threads; its outer free end impinged upon a tumour, the fruit-sac. The *right* tube was dilated in its outer half into a thick fleshy swelling. Between the right ovary and right Fallopian tube was a cyst, with thin walls larger than a hazel-nut. The fruit-sac was as large as a goose's egg; it lay behind the right Fallopian tube and ovary, apparently grown to both. The walls of the sac consisted of peritoneum, a strong muscular coat, the chorion, and amnion. Within the sac lay a placenta with extravasated blood, and an embryo of more than two months' development.

Now, since the corpus luteum was on the *left* side, and the tubal gestation was on the *right*, at the fringed extremity, the ovum must have passed over from the *left* ovary to the right tube. The author thinks that the ovum did not pass through the left tube, across the

uterus, and along the entire length of the right tube, because the middle part of the right tube was compressed by the cyst described; but believes that there was an *extra-uterine transmigration*, and that the ovum passed either directly or after a passage through the abdominal cavity into the right Fallopian tube. In support of this view, the two cases of Oldham and Rokitansky are quoted. In Rokitansky's case a uterine pregnancy resulted, an interstitial pregnancy in Oldham's, and a tubal pregnancy in the present case.

If, in these three cases, the morsus diaboli of one side had been united by adhesions to the opposite ovary, the mode in which the migration happened would be clear enough, but only in Oldham's case were such adhesions probable. Klob showed that the morsus diaboli of one side was often easily brought into relation with the opposite ovary, and held that, as the result of the turgescence attending menstruation, such a relation frequently occurred.

The author contends that such proximity is not necessary for the passage of the ovum, and cites the observations of J. Müller, that in many amphibia and fishes the openings of the tubes are widely distant from the ovaries. He thinks that a kind of capillary stream is set up by the action of the ciliated epithelium, which mostly leads towards the openings of the tubes; and that this is more likely to sweep the ovum into the tube corresponding to the ovary from which the ovum escaped. If the ovum escapes from the hinder surface of the ovary, it may easily fall into the peritoneal cavity, and be lost altogether.

The possibility of the passage of an ovum from the ovary of one side to the opposite side of a simple uterus, is proved by the fact that the placental wound is frequently found on the side opposite to the ovary which furnishes the corpus luteum, and even, as Virchow observed, over the mouth of the opposite Fallopian tube. The author thinks it probable that intra-uterine transmigration may be effected through the muscular erectile action or compression of the uterus occurring shortly after conception, squeezing the yet free ovum upwards towards the opening of the opposite tube, and possibly into the tube itself.

See also Klob, "On the Migration of Ova" ('Wien. Wochenbl.,' xvii, 40, 1861, and 'Year-book' for 1862, p. 331).

Dr. F. A. Kehler, "On the Tubo-ovarian Connecting Apparatus of Pank, and the Mechanism of the Transit of the Ovulum into the Fallopian Tube" ('Henle und Pfeuffer's Zeits.,' 1863).

Prof. Braun, of Vienna, in an interesting paper, "A new Contribution to the Knowledge of Amniotic Bands" ('Zeitschr. der Gesellschaft der Aerzte in Wien.,' 1862, and 'Mon. f. Geb.,' March, 1863), endeavours to explain the mode of formation of bands and membranes in the amniotic sac, which are sometimes found in connection with intra-uterine amputation of foetal limbs.

The formation of the amnion takes place through cell-multiplication and special relations of growth of the external layer of the germinal membrane. The first amniotic folds are developed by a rapid surface-growth at one spot; these are carried up in a definite direction towards

the back of the embryo, and the final coalescence of the approaching folds occurs in one point, after which the amnion remains for a time in connection with the serous envelope. Anomalies of this connection, which are most frequently caused by a deficiency of amniotic liquid, or by the secretion occurring too late, may interfere with the development of the embryo, of which the author communicates two cases—

(1) On the body of a new-born child, weighing four and a half pounds, and nineteen inches in length, a skinny, flaccid sac was found at the back of the cranium. This sac presented on its posterior aspect a fissure two inches in length, and was covered with shreds resembling the amnion in appearance and structure. The right frontal bone, the parietal bones, and the occipital bone, were undeveloped. In the skull-cavity were sero-fibrous strings running from one side to the other. The palate was fissured. On the right hand the first three fingers were completely amputated; from the metacarpal bone of the index to the stump of the middle finger ran a sero-fibrous string, having at its extremity an appendage as large as a pea, covered with normal skin. On the left hand were several strings which incompletely cut the thumb, divided the index fingers into two unequal halves, and compressed and bent the middle finger; in place of the fourth and little fingers a small protuberance existed, covered with skin, and divided in several parts. On the left foot the second and third toes had grown together. On the right foot the third toe was attached to the fourth by a sero-fibrous cord; the ungual phalanx of the second was amputated. On the placenta were found indications of amniotic bands.

(2) The second case related to a male fœtus, born living, fifteen and a half inches in length. The frontal bone was not developed, and several scars existed on the forehead, which were connected internally with the dura mater, and through this at several points with the inner membranes of the brain; from these latter ran several torn pseudo-membranous strings. In place of the nose, two fissures existed. The upper lip was split in its right half, and attached to the right ala nasi; the left half was everted, together with its alveolar continuation. On the right hand the ungual phalanges of the three middle fingers were imperfectly developed, and from the end of the ring finger a cord about 2" in length ran under the middle to the ulnar side of the index finger. On the left hand, besides the thumb, all the fingers were imperfectly developed, the last three bent, and attached to each other by bands of skin. The right foot was clubbed, the left was normal in direction, but the phalanges of the fourth and fifth toes were very rudimentary; the rest only consisted of a rudimentary phalanx, without any trace of nail-formation, and connected with each other by bridges of skin; on the second toe was a torn pseudo-membranous string. From the inner surface of the amnion, which appeared normal in appearance, several strings proceeded, 2" to 3" in length, hanging free in the amniotic cavity, or attached to opposite points. At the point of insertion of the umbilical cord, near the edge of the placenta, roughened, a spot existed, denuded of amnion, from which several thin shreds and strings proceeded.

Dr. W. M. Turnbull ('Australian Med. Journ.,' July, 1863), "On the Measurement of the Fœtal Head," gives the general results of the measurement of 50 heads of children born in Australia. Of the mothers of these children, 28 were Irish, 12 English, 6 Scotch, 1 German, 1 a native of Jersey, 1 a Victorian (Melbourne), and 1 was born in Sydney. Thirty male and twenty female heads were measured.

	In.	Eighths.
The mean occipito-frontal diameter was	4	$5\frac{38}{80}$;
The mean bi-parietal	3	$4\frac{36}{80}$;
The mean bi-mastoid	3	$2\frac{21}{80}$;
The Victorian, female, gave occipito-frontal	4	7;
Bi-parietal	3	5;
Bi-mastoid	3	4.

The author contrasts these figures with those of several authorities, and finds that the results of his own measurements, as regards the difference between the bi-parietal and bi-mastoid diameter, differ somewhat from those of Prof. Simpson, the average difference being scarcely $\frac{2}{8}$ ths of an inch.

ON TEMPERATURE, ETC., DURING THE PUERPERAL STATE.

Dr. F. Winckel, of the University of Berlin, has published an interesting paper, entitled, "Observations on the Temperature during Labour and the Puerperal State" ('Mon. f. Geburt.,' Dec., 1862).

Although many valuable observations have been made on the temperature of the living body in its normal physiological condition and in febrile diseases, it is remarkable that investigations on the state of the animal heat during and after parturition have been hitherto altogether wanting; and this is the more singular, since the correct appreciation of the temperature curves of the puerperal state must be most closely connected with the whole process of labour, as well as with the consequent production of heat. When we reflect that, according to Hecker's opinion, the intensity and succession of pains exercise a most important influence upon the increase of temperature soon after labour, may not the pains themselves be measured by the thermometer? And may we not hope to discover certain differences between normal and abnormal pains, especially as, according to the experiments of Helmholtz, the temperature of a muscle affected by tetanus is perceptibly raised; and, according to Béclard, a muscle merely affected by tension develops more heat than when it performs, at the same time, an external mechanical function?

From various reasons, the author always determined the temperature of the vagina before, during, and after labour. A sensitive thermometer was placed in the vagina, so that the globe lay from two to four inches within the canal, and this was kept in position by the thighs, which were pressed against each other. To determine the temperature in the axilla during labour is not only tedious to the physician, but almost intolerable to most parturient women, from the irksome position of the arm. In the axilla it is necessary that the thermometer shall remain at least twenty-five minutes; while in the vagina, on the average, nine

minutes are sufficient for the thermometer to reach its highest standard; moreover, the instrument does not cause any inconvenience to the women, whether they lie on the back or on the side. The questions then arose whether the canal of the vagina might not be too wide during labour to allow an accurate determination of the temperature to be made, and whether conclusions as to the temperature of the whole body could be drawn from the local hyperæmia of the vagina. It therefore became necessary to make comparative observations on the temperature in the axilla and in the vagina. These gave the following results:—(1st) That if all other circumstances, such as clothing, air, food, &c., remained the same, the difference between the temperature of the axilla and of the vagina was nearly constant, that of the latter being 0.1° to 0.4° C. higher than that of the former; (2nd) that if variations occur in this difference, they almost always depend on the greater variations of the temperature of the skin; (3rd) that even if considerable morbid conditions of the vagina and uterus were present, which generally occurred after, but not during birth, there was almost always a constant ratio between the temperature of both places, so that it was clear we might, during and after parturition, draw just as certain conclusions as to the temperature of the blood from the heat of the vagina as from that of the axilla. In 100 observations made in women who were in the last two months of pregnancy, the author found the mean temperature of the vagina, between 9 and 10 a.m., to be 100.67° Fahr.; and between 5 and 7 p.m., 100.79° . This remained the same during the whole of the last two months, and did not even increase during the last few hours before labour. In one case only a slight increase of temperature occurred in the evenings of the last four days before labour. The expectation, therefore, of being able to determine the advent of labour by the thermometer was not fulfilled.

In the first period of labour it is not difficult to ascertain the temperature of the vagina; during the second stage, if the head descends rapidly, the thermometer is sometimes expelled; but where the head advances slowly, or where it remains fixed for some time, we may, even during the second period, determine the temperature without much difficulty. Premature rupture of the membranes is avoided by introducing the globe in an oblique direction towards one or other synchondrosis, below the posterior labium of the os uteri.

In drawing conclusions from the facts observed, the normal daily variations of temperature must be considered. Animal heat increases, under ordinary circumstances, from 2 to 10 a.m., and decreases from 10 a.m. till 2 p.m.; it then again rises from 2 till 6 p.m., and decreases from 6 p.m. till 2 a.m.

Muscular activity perceptibly increases the temperature, according to Davy, by 3° — 7° C.; and inasmuch as muscular action continually increases as labour progresses, we should expect a marked increase of temperature, especially in primiparæ. But many circumstances concur during labour to regulate, and even diminish, the temperature. The majority of parturient women take little or no food during labour, but, correspondingly with the increased action of the skin, most of them only ask for cooling drinks, by which animal heat is diminished. Moreover, inspira-

tion is generally short, rapid, and superficial, while expiration is prolonged and intensified; hence less oxygen is carried into the blood, and, at the same time, the evaporation from the lungs is increased, whereby cold is produced. Heat is also lost by evaporation from the skin, especially as the women are only lightly covered. From observations made on forty parturient women, the following results were obtained:—The mercury always rose much more rapidly during the pains than during the intervals of the pains. The temperature reached its acme at the acme of the pain, and then rapidly fell.

In every natural labour the temperature of the body is slightly raised— 0.34° to 0.40° Fahr. It does not rise continually, and in proportion to the progress of labour, but the ordinary daily variations of temperature remain unaffected. The temperature is a little higher in the second than in the first period. The temperature was not affected by early rupture of the membranes, nor by the labours being premature. Immediately after birth, taking the average of fifty cases, it was 105.05° Fahr. Compared with the temperature of the second period, it was slightly increased when labour occurred in the morning, and slightly diminished when labour occurred in the evening.

After every normal labour the temperature rises about 1° during the first twelve hours, and only falls in the second twelve hours.

In the case of abnormal pains it was found that, if any inflammation was present, the temperature increased continuously, even during the intervals between the pains, and that after birth it suddenly fell again considerably.

Dr. Puech ('Gaz. des Hôp.,' April 21st, 1863) has communicated to the Academy of Sciences, Paris, a paper "On the Influence of Vicarious Menstruation on Ovulation," of which the following are the conclusions:

1. Vicarious menstruation, *i. e.* supplemental hæmorrhage, is said to exist when, at the regular periods, a flow of blood takes place elsewhere than from the genital organs.

2. All parts of the body may be the seat of these hæmorrhages; nevertheless they occur more frequently in some localities than in others; thus, in Dr. Puech's cases, they were met with from the stomach in 32 cases, from the breast in 25 cases, from the lungs in 24 cases, from the nasal mucous membrane in 18 cases.

3. In all cases which have been carefully observed, antecedents either of hysteria or of an exaggerated nervous sensibility have been noticed.

4. In general, the menses have been absent (183 cases), but sometimes (in 15 cases), at the very time of the occurrence of the vicarious menstruation, a slight flow of blood has been noticed.

5. The genital organs are generally healthy, although they have sometimes been found to be abnormal. In 11 cases there was atresia, either congenital or accidental.

6. With the exception of these last-mentioned cases, absence of the menses does not imply sterility. Except in the case of grave disorders, ovulation continues to take place, and the rupture of the Graafian vesicle corresponds with the period of vicarious menstruation.

7. Pregnancy, accordingly, is possible, and has been observed. It

suspends the deviation for the time, although it may reappear after delivery or at the cessation of nursing.

8. Although compatible with health, and occasionally existing for the whole period between puberty and the time of the cessation of menstruation, the deviation is a pathological condition; nay, more, it is not free from danger, having occasionally been the cause of death.

Dr. Matthews Duncan describes the state of the cervix uteri in a woman who died in the eighth month of pregnancy ('Trans. of Med.-Chir. Society of Edinburgh,' June 1863, and 'Ed. Med. Journal,' Sept., 1863). The cervix measured about an inch in length. It easily admitted the finger. Its tissue was much hypertrophied, and completely softened in every part. The rugæ, especially the anterior and posterior columnæ, were greatly hypertrophied and very prominent. The lower margin of the cervix could easily be identified by the presence of a row of Nabothian follicles; the upper margin by the abrupt termination of the arbor vitæ, and the expansion into the smooth-walled cavity of the uterus. The internal surface of the body of the uterus, examined microscopically after the chorion was detached from it, showed no denudation of the muscular fibres, but the surface formed of a layer easily detached, in an early stage of putridity, composed of decidual structures, especially of fusiform nucleated cells, which seemed to be less fusiform in shape and rounder the nearer they were to the chorion.

Roederer held that after the fifth month the cervix is gradually expanded from above downwards, and contributes to the formation of the cavity of the pregnant uterus ('Elementa artis Obstetriciæ,' Göttingen, 1759, p. 23). Weitbrecht, in his treatise ('De Utero Muliebri,' 1750), first described the true development of the cervix in pregnancy, and showed by actual dissection that it remains undeveloped till a short time before parturition. This view is confirmed by the course of the uterine artery as it approaches the cervix, and also by the situation of the broad ligaments upon the side of the uterus, which remain, during pregnancy, nearly the same as in the unimpregnated state. If the cervix were developed—as most writers assert—then it would necessarily follow that, with the growth and expansion of the cervix into the lower part of the great uterine cavity, the uterine arteries and the lower parts of the broad ligaments would be elevated, accompanying the growing adjacent parts, and that the artery would approach some part of the expanded uterus.

Dr. A. S. Donkin, in a paper on "The Physiological Action of the Uterus in Parturition" ('Ed. Med. Journ.,' Dec., 1863), disputes the accuracy of Wigand's theory that the contractions of the uterus in parturition are essentially peristaltic, commencing in the cervix and gradually advancing into the fundus, and then pursuing a retrograde course to the point from which they originated. Dr. Murphy ('Lect.

on Midwifery,' 2nd edit., p. 180) considers uterine contraction to be peristaltic; but, in opposition to Wigand's theory, maintains that it commences in the fundus, and pursues its course towards the orifice of the uterus. The tension of the cervix, which, according to Wigand and his followers, constitutes the earliest manifestation of uterine contraction, is considered by Dr. Murphy to be merely passive, and the result of the mechanical pressure of the liquor amnii propelled against the inner surface of the lower segment of the uterus. Braun ('Lehrbuch der Geburt,' p. 150, Vienna, 1857) maintains that the contractions of the uterus do not begin in the cervix, but at the orifices of the Fallopian tubes, and then expand equally over the entire circumference of the organ. Scanzoni ('Lehrbuch der Geburt,' p. 171, Vienna, 1853) agrees with Dr. Murphy in his objections to Wigand's theory, but holds that a normal uterine contraction commences neither in the fundus nor in the cervix, but is equally spread over the whole organ. Dr. Christie ('Ed. Med. Jour.,' vol. iv, p. 481) asserts that the retraction of the foetal head at the commencement of a labour pain—on which Wigand chiefly based his theory—is not a real, but only an apparent occurrence. The above authorities, though differing as to the origin and course of the uterine contraction, all agree *that in each contraction the entire organ participates, the cervix included.*

The author believes this latter view to be inaccurate, and submits the two following propositions: (1) *During natural parturition the seat of contraction is the fundus and body of the uterus; contraction ceases entirely in the cervical segment.* (2) *The cervix, and a short zone of the body of the uterus, continuous with and adjoining it, do not contract with each labour pain, but, instead, undergo passive mechanical expansion, by which the canal of the cervix is dilated so as to permit the escape of the fetus and its appendages.*

Physiologically, then, during parturition a line separates the lower or cervical zone from the lateral and fundal regions above. *Below* this line there is passive mechanical expansion; *above* it, active rhythmic contraction. The author supports these propositions by the following arguments:

1. The marked differences in anatomical and histological structure between the fundus and cervix uteri.

a. In the mode of connection with the peritoneum, on which M. Jobert observes ('Lancet,' 1844, vol. i, p. 370), "It may be established as a law that the peritoneum is intimately connected with the *body* of the uterus by muscular fibre, both in woman and the lower animals, never by areolar or yellow elastic tissue; while through the entire mammalian series lax areolar or connective tissue is the mode of union between the peritoneum and the neck of the uterus, the vagina and large ligaments."

b. In the great difference between the middle coat of the cervix and that of the fundus—first, in the absence of a superficial layer of longitudinal muscular fibres; secondly, in the much more circular arrangement of its muscular fibres; and thirdly, *in the preponderance of elastic fibrous tissue over the muscular element.*

c. In the peculiar arrangement of the mucous membrane of the cervix,

which is folded up in a manner so complex as to give the greatest possible extent of surface in the least possible space.

2. *The pathology of placenta prævia** shows that the whole of that portion of the placenta (whether entire or in part) which is *abnormally implanted within the lower or cervical zone of the uterus is detached or peeled off during the first stage of labour, while the other portion, normally seated beyond or above the boundary of this zone, retains its attachment until after the expulsion of the fœtus.* The active rhythmic contraction of the upper zone, *i. e.* above the line of spontaneous detachment, with the passive or elastic expansion of the lower zone, clearly explains this.

3. *The gradual thinning, and at last complete obliteration, of the cervix as labour progresses.*

Practical observation further convinces the author that the cervical region of the uterus does *not* contract during a labour pain; the rigidity of which it is then the seat is not evidence of contraction, but the effect of the distending mechanical forces to which it is subjected.

If the views above stated be correct, then it is easy to understand why the encroachment of the placenta, even to the slightest degree, within the cervical zone of the uterus, is incompatible with normal labour; why any portion of the placenta thus abnormally seated is detached during that process, and its separation attended by hæmorrhage of a character opposite to that which is accidental and *post partum*, in being synchronous with uterine contraction, and ceasing during relaxation; and lastly, *why this unavoidable hæmorrhage is spontaneously and permanently arrested at a certain period during the progress of labour.*

The period of spontaneous cessation of the hæmorrhage in placenta prævia has been shown by Dr. Barnes (op. cit., p. 54) to coincide with the period of complete detachment of the placenta from its abnormal adhesion within the cervical zone.

The author believes these phenomena to be due to the mechanical *dilatation* of the cervix, and not, as Dr. Barnes thought, to its *contraction*. In cases of placenta prævia during the first stage of labour, this expansion of the cervical zone of the uterus and detachment of the placenta from it proceed *pari passu* until the period arrives when the portion of the latter abnormally seated is entirely cast off.

The sudden arrest of the hæmorrhage at this period is not due simply to the completion of placental detachment, but to *the degree of expansion which the cervical zone has then undergone*; the utero-placental vessels, previously divided on its inner surface, are by this expansion of its tissues mechanically compressed and occluded in passing through its substance.

In other words, the remarkable change of contour—of circular stretching and shortening—which this region of the uterus has then been subjected to, and the disturbance of the natural relations of its tissues, are so extreme, that blood-vessels can no longer permeate its substance as cylindrical canals pervious to the blood.

This mechanical squeezing of the divided utero-placental vessels continues until the fœtus is expelled; passive contraction of the cervix then replaces the previous passive expansion, and in its turn is power-

* See Dr. Barnes on the 'Pathology and Treatment of Placenta Prævia.'

fully hæmostatic in preventing a recurrence of the hæmorrhage after the uterus has been emptied. This is the mechanism by which the ante-partum hæmorrhage in placenta prævia, whether partial or central and complete, is spontaneously and permanently arrested.

In a paper "On the State of the Internal Surface of the Uterus after Delivery" ('Trans. of Obstet. Society of London,' vol. iv, p. 107), Dr. Matthews Duncan supports the conclusion of William Hunter, that "the decidua is an efflorescence of the internal coat of the uterus itself, and that *one stratum of it is always left upon the uterus after delivery.*" Cruveilhier taught that, after delivery, the muscular tissue of the body of the uterus is everywhere laid bare, and Dubois still holds a similar opinion ('Traité Complet de l'Art des Accouchements,' tom. i, livr. 2me, p. 430); but the author believes that at no time during pregnancy, or after it, is the decidua thrown off in mass, or the muscular tissue denuded. As the superficial layers of the decidua gradually become obsolete and caducous during pregnancy, new growth of mucous membrane takes place beneath the old; and at whatever time miscarriage may occur, the separated decidua always leaves a layer covering the internal surface of the uterus. In support of this, the author cites the observations of Chisholm ('Ed. Med. Journ.,' Dec., 1857), Virchow, *ibid.*), Robin ('Mém. de l'Acad. Imp. de Méd.,' 1861, p. 150), and Priestley ('On the Development of the Gravid Uterus,' p. 98). In reference to the placental site, the author's original opinion, that after delivery the persistent layer of mucous membrane is found, as in early pregnancy, to be thicker at the site of the insertion of the placenta than elsewhere, is confirmed by the more recent researches of Robin. With regard to the reproduction of uterine mucous membrane after delivery, or during pregnancy, Robin and Priestley believe that during pregnancy, after the fourth month has passed, the whole mucous membrane of the uterus, or the whole decidua, with the exception of the serotina, is thrown off from the subjacent muscular layer, being displaced by a new mucous lamina, which at that time springs up beneath the old decidua.

The author dissents from this view, and believes that at no time, either during pregnancy or after delivery, is the muscular layer laid bare.

SIMULTANEOUS UTERINE AND EXTRA-UTERINE PREGNANCY, PROCEEDING TO THE FULL TERM OF GESTATION.

The two following cases are interesting from their extreme rarity; and the recovery of the patient in the second case is the more remarkable, as most, if not all, of the cases on record have ended fatally in the early months of gestation. In the first, recorded by Mr. L. R. Cooke ('Trans. of Obstet. Society of London,' vol. v, p. 144, and 'Lancet,' vol. ii, 1863, p. 39), the patient, æt. 39, was taken in her fourth labour on Dec. 8th, 1862. Her previous labours had been natural, and, with the exception of some difficulty in standing, from a constant sense of weight in the abdomen, and an inability to lie long upon her back or upon the

left side, no unusual symptoms were present during pregnancy. On external examination, the abdominal tumour was more defined and spherical than usual, tilted forwards, and considerably to the left side, with its apex on a level with, and about two inches to the left of the umbilicus, so that ovarian disease was at first suspected. A further examination revealed the undoubted existence of a living fœtus, and a placental souffle was heard over a large portion of the tumour. A vaginal examination showed the canal much elongated, its rugæ obliterated, and the os uteri beyond reach. Suspecting an abnormal gestation, Mr. Spencer Wells and Dr. Kumar (Vienna) now saw the patient with the author. It was thought the sounds of two fœtal hearts could be heard, while the extensive surface over which the placental bruit was audible gave a suspicion of two placentæ. At this time the pains were so slight and at such long intervals that, after the bladder had been emptied and a sedative administered, the patient was left. She passed a good night, and by 6 p.m. next evening the expulsive pains were strong and regular. On examination, the sacral concavity was now found occupied by a firm, resisting, rounded tumour, presenting no trace of fluctuation, and immovable under as much force as was justifiable between the pains. Its presence reduced the antero-posterior diameter of the inlet to less than two fingers' breadth, through which no os uteri could be felt; but, resting on and anterior to the symphysis, the fœtal head was recognised. Dr. Greenhalgh and Mr. Meates now saw the patient. The diagnosis was difficult, from the great anteversion of the uterus, but the obvious indication was to deliver the woman as speedily as possible. Chloroform being given, the tumour was with difficulty pushed out of the pelvis, and delivery accomplished by version. The placenta was removed without difficulty; no subsequent hæmorrhage occurred, but vomiting, dyspnœa, and great abdominal pain supervened next day, and she died about forty-eight hours after delivery. On opening the abdomen after death, the body of a full-grown female fœtus was found within, its membranes unruptured and distended with liquor amnii. The anterior surface of the chorion was in immediate relation with the abdominal peritoneum, to which it was not adherent, nor was it enclosed in a capsule of any kind. Beneath the tumour the uterus lay, partially contracted and unruptured. In the peritoneal cavity was much grumous fluid. On opening the membranes and removing the fœtus, it was found that the placenta was situated in and firmly attached to a shallow capsule, formed of the expanded and enlarged fimbriæ of the right Fallopian tube, which, on its convex or peritoneal aspect, was firmly bound down by numerous and very tough bands. A stylet could be passed along the tube to its expanded extremity, where it was arrested by the placenta. The author remarks that the lessons derivable from this case are—

1. That in cases of doubtful tumours complicating parturition, evidence of an extra-uterine fœtation should be sought for as soon as possible after delivery.

2. Whether, in the event of such a discovery, it is or is not probable that the adhesions of the tumours may be so firm and numerous as to render gastrotomy inadmissible.

3. Whether, supposing the existence of such adhesions to be admitted, it is advisable or justifiable to remove the fœtus alone, with the certainty of a portion of the liquor amnii escaping into the peritoneal cavity, and with the possibility of the placenta becoming encysted, and being thrown off at a future period.

The second case is recorded by Dr. J. Pennefather ('Lancet,' vol. i, 1863, p. 688). A lady, æt. 38, the mother of five children, miscarried in August, 1861, and again became pregnant in the following October. From the time of conception she felt unusually unwell, and suffered much from constipation. While dressing, on April 3rd, 1862, she was seized with acute pain in the abdomen, which was relieved by purgatives. Much tenderness, however, remained; and she was unable to lie on either side, but more especially the left. Constipation continued during pregnancy, and vomiting and flatulence distressed her much. The abdomen continued to increase until it attained an enormous size; the stomach now retained little else than brandy and water, and sleep was only obtained by large doses of morphia. On September 4th, after a labour of six hours, a full-grown female infant was born. From the size of the abdomen, her medical attendant suspected a twin case; but after careful examination, the tumour was considered to be ovarian. The author now saw her. A large hard tumour was felt to the left of the umbilicus; and, with some difficulty, the fœtal heart was heard. Ergot was given, and found to act powerfully on the uterus, but the tumour was not influenced by it. Half an hour after it was given no fœtal movements could be distinguished. The uterus now ascended considerably, and the author regarded the case as one of coexisting intra- and extra-uterine pregnancy. The patient, who had previously been much emaciated, after this rapidly gained flesh, and for three months her general health steadily improved. In the early part of February, however, hectic set in, with distressing diarrhœa and profuse sweats, the pulse ranging from 120 to 160. On February 14th her medical attendant detected fluctuation in the left iliac region. Concluding that this arose from fluid in the ovary, and with the perfect concurrence of two other practitioners, a full-sized trocar was plunged into the tumour. No fluid flowed, and on withdrawing the trocar it was covered with fœces. The patient was kept on her back, and the wound healed rapidly. The hectic immediately subsided, and for a few days all the urgent symptoms were much relieved. The bowels then became troublesome, tenesmus occurred, and the emaciation was extreme.

On the 10th of March the abdominal tumour had become much smaller, and from the constant tenesmus, and the immense quantities of fœcal matter passed, it was thought the tumour might be caused by an accumulation of fœces in the rectum. Examination of the bowel by the finger caused intense pain, but while using the speculum ani a bone of the fœtal skull was seen at the orifice of the vagina. The patient was now put under chloroform, and the vagina dilated by a large speculum. The parietal and occipital bones were first brought away, and after the clavicles and scapulæ had been extracted, firm traction on the sternum

brought down a full-grown male child, minus the head, much decomposed, and saturated in faeces. The vagina was well syringed out, and the patient left free from pain. Examination with the speculum two days after showed a large rent in the vagina to the right of the os uteri. For some days all faecal matter passed per vaginam about every half hour; this gradually diminished, and two months afterwards the faeces passed naturally, and the patient rapidly regained health and strength.

UNUSUAL LOCALITY OF PREGNANCY.

Dr. Haydon records a case of extra-uterine foetation, in which two foetuses were found in connection with the same tube ('Trans. of Obstet. Society of London,' vol. v, p. 280). A young woman died after a few hours' illness, from rupture of the sac of a tubal foetation, and consequent hæmorrhage. The post-mortem examination showed all the organs healthy, except the uterus and appendages.

In the peritoneal cavity was found a mass of coagulated blood extending seven inches upwards from the pubes towards the left ilium, and from ten to twelve inches on the right side up to and round the duodenum. In the pelvis were several pounds of dark, clotted blood. The foetus had escaped from the ruptured sac, and lay with its placenta and membranes loose in the pelvis. Dr. Tyler Smith and Dr. Braxton Hicks give a report of the uterus and its appendages.

After mentioning the size of the uterus, and its decidua, they show that the right Fallopian tube came from the middle of the uterus. The tube was much elongated and distended in the middle by a sac which had burst. The right ovary, double the size of the left, was attached to the middle third of the sac, and contained a corpus luteum of a six months' normal pregnancy, except that the centre was already filled with a white structure, and seemed to have possessed a well-defined border to the cavity. The foetus which escaped answered to that of a three months' pregnancy, was enclosed in its membranes, and presented a shrivelled appearance, with scarcely any trace of bony structure. Appended to the edge of the rent in the sac was a small solid mass the size of a walnut, which proved to be also a small foetus, packed tightly within a membrane, the base of which was adherent to the outside of the sac by firm membranous adhesions, forming a narrow pedicle. There was no trace of any ovular structures beyond the enclosing membrane. The following conclusions are added by the reporters:—1st. That some time since, the patient had conceived extra-uterine; that the foetus was attached to the fimbriated extremity of the Fallopian tube, in such a manner as not to form any impediment to conception. That the foetus died at about the second month of pregnancy, enclosed still in its ovular structures; that it then gradually came away in its present state, the chorion villi being absorbed. 2nd. That at a later period, probably six months before death, she again conceived extra-uterine, but the ovum now descended to the middle of the tube, where it became arrested, lived about three months, and then died, three months after which the sac burst and death ensued.

It appears probable that the position and length of the Fallopian tube

was congenital. It seems improbable that the development of one side of the uterus could have been the cause, inasmuch as the interior of the uterus was perfectly symmetrical, and the walls of equal thickness.

Dr. Müller ('Allgem. Wien. Med. Zeit.,' 1862) records a case of extra-uterine fœtation, in which the ovum became enveloped in an inguinal hernia of the right side, so that the sac springing from the inguinal region formed a round tumour reaching to the knees, and weighed eight pounds. A mature living child was removed by operation. The mother died shortly after of internal hæmorrhage. A post-mortem examination was not permitted.

Dr. Simpson relates the following case for Prof. Simpson ('Ed. Med. Jour.,' Sept., 1863). The patient, æt. 45, usually enjoying good health, had not been pregnant for twelve years, and suffered from severe pelvic pains. A sensitive tumour stretched across the pelvis, between the uterus and rectum, wanting some of the characters of pelvic abscess, but possessing most of those of a pelvic hæmatoma. Suddenly the tumour greatly enlarged, and produced distressing and urgent symptoms. The author made an opening into the mass through the roof of the vagina. Several large, old, and recent coagula were discharged, and at last the foot of a small fœtus projected; a slender, early, entire fœtus, with the placenta, was extracted, and the patient recovered.

Dr. Matthews Duncan exhibited to the Med.-Chir. Society of Edinburgh, June, 1863, a fœtus nearly fully developed, but in an advanced stage of decomposition, which he had delivered per anum as a breech presentation. After the birth of the child the author passed his hand and arm per anum into the cyst, to examine it and remove its contents. In spite of this immense distension, the bowel recovered its function so quickly that six days after the operation the sphincter had completely regained its power ('Ed. Med. Jour.,' July, 1863).

MECHANISM OF DELIVERY.

The following are the conclusions arrived at by M. Laborie, in a memoir "On the part which the symphysis pubis plays during the process of labour" ('Gaz. Hebdom.,' tom. ix, No. 34, 1862, and 'Mon. f. Geb.,' May, 1863).

(1) Almost all accoucheurs assume that the ligaments uniting the articulation of the pelvis become relaxed during pregnancy; through this the joints attain a certain degree of mobility, the extent of which, however, is very indefinite. (2) All anatomists now place the symphysis, sacro-iliac, and pubic, in the class of arthrodia. According, however, to the author's observations in the pelves of recently delivered women, these joints belong to a special class of themselves; for while, by their opposing surfaces, which on the one bone are concave and on the other convex, they present the character of the enarthrodia, they also, by appearing only movable in one direction show their resemblance to the ginglymoid joints. (3) It is only when the child enters the true pelvis, and is fairly engaged in it, that the mobility of the symphysis exercises any influence upon the act of birth.

(4) Here the principal resistance is met with in the transverse diameter; the pressure, however, exerted by the head of the child against the tuberosities of the ischium is strong enough to effect a partial separation of the bones. This happens entirely according to the mechanical laws of the lever: the distance between the sacro-iliac symphysis and the tuberosity of the ischium represents the long arm of the lever; this distance is 128 millimètres (about 5 inches). Thus a separation of the symphysis to the extent of only 2 millimètres on its lower end permits to the external end of the lever—*i. e.*, the transverse diameter—an increase of nearly 2 centimètres (about one seventh of an inch), and this is probably even greater. (5) Inasmuch as in women above the age of thirty the mobility of the symphysis is altogether nil, or at least very limited, the difficulty of the birth concentrates itself in the true pelvis, and in these cases, notwithstanding the otherwise normal structure of this, delivery must be frequently terminated by the forceps.

RETROVERSION OF THE GRAVID UTERUS.

Two cases are recorded by Mr. Hardey ('Trans. of Obstet. Society of London,' vol. v., p. 267). In the first case, all the symptoms of retention of urine occurred suddenly in a woman at the end of the fourth month, of pregnancy. An ovarian tumour of the left side had seriously obstructed the delivery of her first child, nine months previously, and now prevented the uterus rising out of the pelvis. The bladder was relieved, and the uterus found retroverted, with its fundus lying deep within the recto-vaginal pouch. Reduction was effected by placing the patient on her knees and elbows, and making steady pressure on the fundus with the right hand in the vagina. The recumbent position was maintained for a fortnight, and, five months after, she was delivered of a child at the full term. Death took place fourteen days after delivery, from strangulation of the intestine by the neck of the ovarian tumour, which, with the small intestines, was found twisted round the left Fallopian tube. In the second case profuse hæmorrhage preceded the expulsion of a large blighted ovum in a woman who believed herself to be at the full term of pregnancy. The uterus was found retroverted, and reposition was effected as in the first case. The author adds a third case, in which retroversion occurred with partial prolapsus vaginae two days after delivery, at the eighth month of pregnancy. The uterus was replaced as in the other two cases, and sponge-pessaries worn for some time.

Dr. Dickie records a similar case in a young unmarried woman who suffered from difficulty in micturition. Menstruation had ceased three months. A week later, complete retention of urine occurred, and the uterus was found enlarged and retroverted. Reduction was effected, after the bladder had been relieved, by placing the patient in the prone position, and making pressure on the fundus with two fingers in the rectum. The patient afterwards admitted that she had taken large doses of croton oil to procure abortion, and the tenesmus thus caused probably produced prolapse of the posterior wall of the vagina and retroversion of the uterus. ('Ed. Med. Jour.,' April, 1863.)

ABORTION.

Dr. Storer, in a paper—the first of a series—entitled “Studies of Abortion” (‘Boston Med. and Surg. Journal,’ Feb., 1863), urges that the same success may be accomplished in the treatment of abortion, which, during late years, has attended the treatment of all stages of labour at the full time. The causes of an immediately or secondarily fatal result of labour at the full period are few; in abortion nearly every one of these is present, with the addition of others peculiar to the sudden and untimely interruption of a natural process and the death of the product of conception. He then dwells upon another and by no means unimportant element—a degree of mental disturbance, often profound, from disappointment or fear,—that to the same extent may be said to exist rarely in labours at the full period. It is extremely important that the nature of the abortion should be clearly understood, and that we should be able to distinguish between proximate and predisposing causes. “How different, for instance, the nature of abortions arising from mechanical violence, external or internal, from a general virus pervading the maternal or fœtal system—from disease of the uterine walls, or of the placental tissue, or the accidental extravasation of blood between them—and how different should be the treatment, although so generally the same.” In the diagnosis of abortion there is often much difficulty, for there is scarcely a phase of uterine or ovarian disease that may not simulate, or be simulated by, some form of abortion; and there is scarcely one that may not induce, or be induced by, the same disturbance of gestation. The partially detached ovum has been mistaken for polypus, the expulsive contractions of the uterus for intestinal flatulence, the cachexia from retention of a dead and putrid fœtus or membranes for malignant or other incurable disease. In the treatment, the duty of the practitioner is, in most cases, *not*—as is generally attempted—to complete the abnormal process as soon as possible, but to arrest it; for even in cases where the danger to the fœtus appears most imminent, its life can be saved. If, however, the expulsion of the ovum be already effected, or be beyond prevention, the process should be *thoroughly* completed.

An able exposition of the fallacy of statistics, in determining the comparative infrequency of abortions, concludes the paper. Taking the same statistics from which Churchill and Clay argue that there are more than *seventy-eight* labours at the full period to every abortion, the author shows, by a tabular statement, that while one observer, Madame la Chapelle, places the frequency of abortions as low as one to every *one hundred and eighty-nine* labours, another, Deubel, who was probably just as unbiassed, supposed it to be one to *twelve*, a difference of over seventeenfold; while Churchill himself, though broadly stating the proportion to be one to seventy-eight labours, in reality had found it by his own experience to be at least one to every *twenty-six* labours. But putting aside the absence of any evident ratio, or law of increase or decrease, between the total number of cases presented and their respec-

live rate of proportion of special cases to their sums total; the writers referred to—as indeed, most others—have not separated premature births from abortions properly so called; hence the impartiality of these statistics—compiled for an entirely different purpose—cannot be appealed to, and yet the conclusion drawn from such erroneous premisses has been, till now, suffered to remain unchallenged.

Dr. Alfred Hegar (Darmstadt) publishes a paper on “The Pathology of the Human Ovum, and on Abortion in the first months of Pregnancy.” This he believes to be of very frequent occurrence, not less than one abortion taking place to every eight or ten births at the full term. The author protests against the too hasty manual extraction of the ovum, which induces irregular uterine action, and frequently gives rise to obstinate hæmorrhage and much subsequent mischief. (*Mon. f. Geb.*, supplementary vol., 1862.)

Dr. Pritchard records a case of abortion produced on the fourth day after dilatation by tents of the *Laminaria digitata* (*Trans. of Obstet. Society of London*, vol. v, p. 198). Three cases of abortion, with profuse hæmorrhage, are reported by Dr. Ramsbotham (*Med. Times*, ii, 1863, p. 89).

Dr. Matthews Duncan, “On some results of Imperfect Deliverance in Abortion or Labour, especially Fetid Uterine Discharges.” (*Ed. Med. Jour.*, Jan., 1863.)

Five cases are here recorded, all of which were marked by symptoms of uterine disease occurring after abortion or labour, local pain, purulent or hæmorrhagic discharges, occasional metrorrhagia, patency of the os uteri, and hypertrophy, or a state of imperfect involution of the uterus; followed, after variable periods, by the expulsion or removal of portions of the decidual or ovuline structures.

In two of the cases,—both of retention of the ovum,—no fetid discharge occurred for some weeks, in one case seven months, after all symptoms of pregnancy had disappeared; in two other cases the fetor—which was afterwards intense—was delayed until part of the decidual structures had been retained five months. This absence of fetor, which renders such cases the less likely to be correctly diagnosed and treated, may be accounted for by the expulsion of the entire ovum, or part of it, without the decidua, or accompanied by only a portion of the latter structure. In such cases the remaining decidua may retain its uterine connections for an indefinite period, and then being thrown off may be retained in utero, and at last become putrid. When the cause of abortion is disease of the decidua, especially if there be hæmorrhage beneath it, or when uterine contraction is strong, then persistent adhesion and retention will be evidently less likely to occur than when the decidua is healthy and uterine contractions are feeble. It is generally believed that the retention of part of the fully developed placenta is rapidly followed by putridity; but in one case mentioned by the author, the incomplete removal of the placenta,—part of which came away a month after delivery,—was not followed by fetor.

DISEASES OF THE MOTHER IMPEDING DELIVERY.

ON THE HYDATIDIFORM OVUM.

The researches of Cruveilhier, Mettenheimer, Gierse, Paget, and Graily Hewitt, have shown that the disease formerly known as "hydatids of the uterus" is, in fact, not a disease of the uterus at all, but simply an hydatidiform degeneration of the ovum. "The little vesicular bodies, expelled singly from the uterus, or in series like beads, really result from certain alterations in the chorion villi, and are always the result of conception." (Graily Hewitt, 'Diseases of Women,' p. 74.)

There is much difference of opinion as to the mode of origin of this vesicular degeneration of chorion. Mettenheimer and Paget believe it to be a true cystic disease, caused by an abnormal development of the elementary cells, and that it is the cause of the death of the embryo; while others, and especially Gierse and Graily Hewitt, maintain that the vesicular bodies are the result of distension of the villi by serous effusion, and that the death of the embryo has preceded this degeneration. The latter theory affords a better explanation of the frequent absence or decomposed state of the embryo than the former. "In very few of the recorded cases of the disease was there any vestige of an embryo. Its absence would seem to be the rule, its presence the exception." (Dr. M'Clintock, 'Diseases of Women,' p. 416.) The period of pregnancy at which the embryo dies materially affects the development of the disease. "If the death of the embryo occur very early, and before the appropriation of certain of the villi to form the foetal placenta has commenced, the ovum may continue to grow, and may remain in the cavity of the uterus, and in such a case the whole of the chorionic membrane would give rise to hydatidiform villi. If, on the other hand, the death of the embryo be postponed until the formation of the foetal placenta has commenced, the hydatidiform degeneration will be necessarily limited to that part of the chorion which is in contact with the decidua serotina." (Hewitt, *op. cit.*) "The early history of these cases is that of pregnancy up to a certain period, when some of the ordinary symptoms of this state disappear and are replaced by others. Persistent vomiting, unusual hardness of the uterine tumour, with its rapid increase and disproportionate size to the supposed duration of pregnancy, and irregular and sudden sero-sanguineous discharges, are the most reliable indications of the disease." (M'Clintock, *op. cit.*, p. 393.) In the diagnosis from normal pregnancy, the absence of the foetal heart sounds and of ballottement are the only two conditions which can be relied upon, since the placental souffle may be heard after the death of the embryo, and the mammary symptoms may be not much altered. Dr. M'Clintock records five cases of this disease in his work on 'Diseases of Women,' pp. 392—410. Dr. Moorhead publishes a case ('Lancet,' vol. i, 1863, p. 205), and Dr. Graily Hewitt records two cases ('Lancet,' vol. ii, 1862, p. 369, and ii, 1863, p. 699). All these cases are very similar. In each case a partial but incomplete separation of the ovum was caused by an accident about the sixth week of pregnancy; this was followed by rapid and dispro-

portionate enlargement of the uterus, and the subsequent expulsion of the hydatidiform mass after slight or severe hæmorrhage. From these and other cases we may infer that this degeneration of the chorion villi is most likely to happen after incomplete abortion about the sixth or eighth week of pregnancy.

ABNORMAL CONDITIONS OF THE PELVIS.

Dr. Olshausen, in a paper "On the Obliquely Distorted Pelvis, with Sacro-iliac Anchylosis" ('*Mon. f. Geb.*, March, 1862, and 'Year-book,' 1862, p. 341), contests the opinion held by Simon Thomas, and Martin, that this distortion might arise from disease ending in ankylosis of the sacro-iliac synchondrosis, and believes that Litzman's view is correct, which is that the ankylosis as well as the peculiar shape of the pelvis in these cases is due to the pressure upwards from the hip-joint on the affected side. Professor Thomas upholds his views in an essay ('*Mon. f. Geb.*, Nov., 1862). Mr. Blair records a case of "Deformity of the Coccyx complicating Labour and causing Recto-vaginal Fistula" ('*Australian Med. Jour.*, Oct., 1862). Dr. G. Braun reports a series of cases in which labour was obstructed by immovable pelvic tumours. ('*Wien. Med. Wochensch.*, xiii, 1863.)

ABNORMAL CONDITIONS OF THE UTERUS.

M. Mattei, "On Complete Obliteration of the Os Uteri as a Cause of Difficult Labour" ('*Brit. Med. Jour.*' vol. ii, p. 401, 1862).

The following is a summary of the views of the author, from a memoir on the above subject, founded on an analysis of forty-two cases.

1. The complete occlusion of the cervix uteri, whether at its orifices or within its cavity, may be the result of local inflammatory action; but in the majority of cases (in nineteen out of thirty-one), it has been the result of the organization of the plastic plug which is found within the cervix during gestation.
2. This obliteration scarcely ever prevents the pregnancy reaching its full period, and sometimes even retards it. Examination alone reveals it at the time of labour.
3. The occlusion is generally (thirty-six times out of forty-two), sufficiently firm to resist the natural efforts, to such an extent, that the woman has, in some cases (three in forty-two), died undelivered. Where interference has been tardy, the death of the child (in seven cases out of twenty-eight), and even the death of the mother (in two out of twenty-eight cases), have been the result.
4. When the obstacle has not been very resisting, the male or the female catheter has sufficed to overcome it; but when these do not succeed, the scissors or bistoury must be resorted to.
5. The bistoury has been in general preferred, but the liability to hæmorrhage, the danger of the angles of the wound enlarging beyond the point of incision, and the possibility of injuring the fetal structures, are objections to its employment.
6. The point of the grooved director, applied with force during the uterine contraction at the lowest part of the tumour, or, when it can be recognised, at the point occupied by the cervix, will effect a passage through the tissues, and so avert the danger incident to the employment of the bistoury.

Dr. Barnes, "A Case of Fibroid Tumour of the Uterus, which obstructed labour ('Trans. of Obstet. Soc. of London,' vol. v, 171). In this case the patient died from symptoms of rupture of the bladder during labour. A hard fibroid tumour was found in the lower part of the anterior wall of the uterus; this was jammed against the symphysis pubis by the pressure of the child's head, and so closed the urethra. Two lacerated openings were found in the bladder.

Mr. Freeman, "A Case of Polypus Uteri complicating Labour." ('Trans. of Obst. Soc. of London,' v, p. 42). Without any previous symptoms, a large polypus appeared during labour, and protruded beyond the vulva, followed by the head of the child. Delivery was effected without difficulty, and no hæmorrhage followed the expulsion of the placenta. Two days after delivery the polypus, weighing three and a half pounds, was removed by ligature, and the patient did well.

PROCIDENTIA OF THE GRAVID UTERUS.

Dr. Husty records a case of total procidentia of the gravid uterus ('Wien. Allg. Med. Zeitsch.,' 1862). The patient, a strong, well-built woman, æt. 34, had suffered since her second labour from procidentia of the uterus. This could not be replaced in her fourth pregnancy, but was always supported by a bandage. When taken in labour, the os uteri was found swollen, dilated, and near the knees; the head of the child, which was dead, was protruding. Reposition was easily effected, but the parts had to be supported to maintain them *in situ*. The head was then perforated, and labour completed with much difficulty. The child weighed nine pounds. The mother recovered, and bore two years later a healthy child, the uterus being maintained in the pelvis during pregnancy by a bandage.

PLURAL BIRTHS.

The occurrence of twin birth with placenta prævia has been thought rare. Cases in which this complication occurred are reported by Dr. Pardey ('Lancet,' vol. 1, p. 53).—Version of first child; mother recovered, children born living, but premature. Dr. Ellis (*ibid.*, 1, p. 138).—Placenta expelled before delivery, version of both children, fatal result to both mother and children. Mr. Chambers (*ibid.*, 1, p. 313).—Perforation of placenta, version, and recovery of both mother and children. The same patient had been delivered seventeen months previously under precisely similar circumstances. Dr. Uvedale West (*ibid.*, 1, p. 346).—One case of twin birth, with placenta prævia, and two cases of ante-partum hæmorrhage, with twins. In the first case delivery effected by version of both children, which were premature, but born living. In the second case delivery natural, after rupture of the membranes; severe post-partum hæmorrhage; both children born living. In the third case first child, with breech presentation, delivered naturally; version of second child from severe ante-partum hæmorrhage; both children

born living. All three mothers recovered. Dr. West combats the opinion that turning in twin births with placenta prævia, or with hæmorrhage during labour, is dangerous, and liable to be followed by post-partum hæmorrhage or collapse; and believes that these may generally be averted by *delivering slowly, i. e.*, by making no traction after the breech has reached the perinæum.

ABNORMAL PRESENTATIONS.

Dr. Ramsbotham, "Clinical Midwifery" ('Med. Times and Gaz.,' vol. i, 1863, p. 4), relates seven cases of transverse presentation, which occurred in his practice during 1843 and 1844. In three of these cases turning was performed, and two of the children were born alive; in two cases evisceration was performed. In one case spontaneous evolution occurred; the child dead. In another case the result is not stated. Of the mothers, five recovered, one died from gangrenous tubercle of the uterus. Of the children, two recovered and four died. The author dissents from the view held by Denman, that in cases of spontaneous evolution the shoulder recedes into the uterus as the breech is expelled downwards, and is convinced that the shoulder does *not* recede, but is, on the contrary, thrust further and further externally in proportion as the breech descends into the pelvis.

Dr. V. Hüter, in a paper "On the Liberation of the Arms in Labours in which the Head is born last" ('Mon. f. Geb.,' March, 1863), mentions the various modes recommended by other authorities, and then describes his own mode of action. Grasping one or both thighs of the child, he makes traction downwards and forwards, turning them near the middle of the mother's abdomen, and so making the trunk revolve round the symphysis. The shoulder, which is most posterior, is thus lowered, and the elbow brought down within reach of the index and middle finger, and the arm liberated in the usual way. In order to liberate the second arm, the author adopts Von Ritgen's plan, which consists in giving a rotatory movement to the child on its long axis, the effect of which is to throw the arm across its breast.

Professor Lazzati ('Annali Univ. di Med.,' Aug., 1863, and 'B. and F. Med.-Chir. Rev.,' Oct., 1863) maintains that in the so-called transverse presentations, when the arm or shoulder presents, the fœtus really occupies an oblique position in the uterus. During the last three months of utero-gestation, and especially during the eighth and ninth, the development of the fœtus is such that the length of its occipito-coccygeal diameter exceeds that of the transverse or antero-posterior diameter of the uterus. The fœtal occipito-coccygeal diameter is ten and a half to twelve inches. The longitudinal diameter of the uterus is twelve and a half to thirteen inches, while the greatest transverse diameter is only eight to ten inches; and the transverse diameter of the inferior segment only seven and a half inches.

This being admitted, and all due allowance made for the variations in these measurements, for the flexibility of the body of the fœtus,

and for any yielding of the uterine walls, the fact still remains that the transverse and antero-posterior diameters of the uterus are shorter than the longitudinal diameter of the fœtus. Hence it is impossible that the occipito-coccygeal diameter of the fœtus can be in relation with these diameters of the uterus; and the longitudinal diameter of the fœtus must, therefore, correspond more or less closely with the longitudinal diameter of the uterus; or, in other words, one or the other extremity of the occipito-coccygeal diameter—*i. e.* the head or the breech—must be in relation more or less exact with the inferior segment of the uterus, whilst the fundus must be more or less closely occupied by the opposite extremity of the fœtus. Assuming this to be true, the author concludes that the terms *transverse position* and *transverse presentations* are incorrect, but that all such are cases of *considerable obliquity* of the fœtus. The head in such cases is placed in one of the iliac fossæ, and on the corresponding part of the inferior segment of the uterus; the breech occupies the fundus, which is usually inclined laterally in the direction opposite to that which is occupied by the head.

If this were not the case, in turning we should have to seek for the feet in one side of the uterus, where, as is well known, they are not to be found. The two cases recorded by the author are interesting.

CASE 1.—A patient, æt. 30, who had lost her first two children, the first after a natural labour, the second after turning on account of shoulder presentation, was seen by the author in the ninth month of her third pregnancy. The fundus of the uterus was strongly inclined to the right hypochondrium, where the small angular parts of the child and active movements were felt. The head lay to the left and below, corresponding to the left iliac fossa. The back was felt directed forwards. A small angular body, which receded as soon as it was touched, could only be felt per vaginam; no ballottement; the shoulder felt distinctly by passing the finger through the cervix. By applying his right hand upon the head in the left iliac fossa, and his left hand upon the nates in the right hypochondrium, and pressing in opposite directions, the author found he could bring the head over the pelvic brim, and therefore contrived a belt which should act in the same way. This consisted of a pad pressing inwards on the left iliac region, and another pressing inwards on the right hypochondrium, fitted with springs, and attached to a support worn on the back. This succeeded perfectly, and the head was thus kept constantly over the pelvic brim. Labour set in a fortnight after, and the child was delivered naturally by the head. In the second case there was considerable obliquity of the fœtus. The right shoulder in the left position ten days before labour, without being preceded by uterine contractions. The same belt was applied, and the compression continued for four days. The child's head was brought over the pelvic brim on the second day, and there maintained. Delivery was natural and easy, the head presented in the first position, and the child was born alive.

Dr. Pajot, in a memoir "On Presentations of the Trunk in Extreme Contractions of the Pelvis," relates five cases of extreme contraction of the pelvis ('Arch. Gén. de Méd.,' August, 1863). Of the first four

cases which ended fatally, the child was mature in three. In the fifth case the fœtus was in the eighth month; labour was induced, and version tried without success, although the arm was amputated; finally, craniotomy was performed. The following conclusions, the author thinks, may be fairly drawn: 1. If the child be alive, and at full term, if it present by the trunk in a contraction below six or seven centimètres (about two and a quarter inches), turning by external manipulation having been tried for the purpose of facilitating the application of instruments, and found to be impossible, the Cæsarean section is to be considered. 2. The fœtus not being at term, and turning being found to be impossible, the amputation of the arm will certainly facilitate the manipulation for version; moreover, the section of the neck or of the trunk will be easily made by the author's mode, and the extraction of the fœtus will not present insurmountable difficulties if it have not passed the seventh month. 3. If the child be dead, even at full time, whatever difficulties and dangers are presented by the series of operations necessary to deliver the woman by the natural passages, the Cæsarean section will be absolutely rejected. After having applied the new mode of embryotomy, we should endeavour to break down successively the different fœtal parts which present themselves at the brim by repeated cephalotripsy.

Dr. Halahan, "On the Treatment of Prolapsed Funis" ('Dub. Quart. Jour.,' Aug., 1862). Prolapsed pulsating funis, with head presentations, generally occurs at the rupture of the membranes. From the records of the Dublin Lying-in Hospital, the funis prolapsed in 304 cases out of 51,061 patients, or about 1 in every 168. The mortality from the above reports, which include all cases of prolapse of the funis without regard to the presentation, was a little over 66 per cent.; but the author believes this to be about the average mortality in cases where the prolapse occurs at the rupture of the membranes with head presentations. Ten cases are related, in all of which reposition was attempted by carefully pushing up the funis above the brim of the pelvis. In 2 cases only did it again prolapse after reposition, and when properly replaced, the author considers no artificial aid is necessary to keep it up. The prolapse occurred in the first stage of labour in 8 cases, and in the second stage in 2 cases. In all but 2 of the cases the membranes were ruptured at the time the prolapse was discovered. In 2 cases the forceps were applied, in 1 of which the mother died. Perforation in 1 case, and the remaining 7 left to nature. Nine of the mothers recovered and 1 died. Of the children, 7 were born alive and 3 dead.

Dr. Lumley Earle condemns the practice of turning in prolapse of the funis, and advocates Sir Richard Croft's method by which the cord is passed up to the fundus of the uterus, and then hooked over the highest part of the fœtus. Of 7 cases of prolapsed funis which he records, this plan was adopted with success in 3 cases; of the remaining 4, version was performed in 2 cases, and in the other 2 the cord was

pushed up above the brim. Of the 4 children, 2 were born alive and 2 dead. The mothers did well in all 7 cases. ('Med. Times,' ii, 1863, p. 642.)

DISEASES, ETC., OF THE CHILD IMPEDING DELIVERY.

DROPSY OF THE OVUM.

Dr. McClintock, on "Dropsy of the Ovum," 'Dub. Quart. Jour.,' Feb., 1863, p. 188. We know little of the pathology of this condition, or of the special conditions which give rise to it. No disease of the amniotic membrane has been found, although many cases have been carefully examined. In a few exceptional cases the amnion was only partially opaque and thickened. That the disease does not depend upon a dropsical diathesis of the woman, is shown by the fact that these patients are often free from general dropsy, and that in many patients affected with general dropsy at the time of delivery there is yet no abnormal increase of the amniotic fluid. In the case of a woman pregnant with twins, the amnion of one child only is generally affected, and this is generally that of the second-born twin. Of 11 twin cases in which the disease was present, in all it was confined to a single amnion, and in 9 cases it was the amnion of the second twin. The dropsy being confined to one ovum points to the cause as local. That the foetus of the dropsical bag of membranes should be the last expelled is probably due to its greater mobility. The disease is more common in multiparæ than in primiparæ. Of 33 cases noted by the author, only 5 were primiparæ. The rapid development of the disease, which is very marked in many cases, affords some clue to the diagnosis. It is constantly associated with abortive ova, and the author believes, with the late Dr. Retzius, that it is a very frequent cause of the early death and expulsion of the embryo. Of the 33 cases 1 ended in abortion at the fifth month and 1 at the sixth month, 12 resulted in premature expulsion of the foetus, and in the remainder the child seemed to have reached the ninth month. Of the 33 cases, 4 resulted in the death of the mother—1 from rupture of the uterus, the child being hydrocephalic; another from puerperal fever, at that time epidemic; and 2 from "debility and prostration;" each of the latter had been confined of twins, and was in a broken-down state of health at the time of delivery. Of the 29 women who recovered, 3 had smart attacks of metritis after delivery. Of the children, 9 were born dead, and 5 of these were in a putrid condition; and of those born alive, 10 died within a few hours after birth. It occurred more frequently with female than with male children, in the proportion of 25 of the former to 8 of the latter. The *presentation* was noted in 31 cases. Of these, the head presented in 20, the pelvis in 9, and the upper extremity in 1. With regard to the *diagnosis*, the expanded state of the cervix, the extreme tension of the lower segment of the uterus, or of the membranes, if the os be open, and the ease with which the child can be displaced, are all corroborative symptoms of the ovum being dropsical." The author knows of no *treatment* capable of arresting the secretion of the liquor amnii, or of causing its absorption when secreted to an

excessive amount. Puncture of the membranes should be performed when the distension of the uterus becomes enormous, even though labour may yet seem distant. If only a portion of the fluid could be drawn off, perhaps labour would not immediately follow, and great relief would accrue to the patient, who might thus be carried forward in her pregnancy.

The three following classes of facts will help to illustrate the functions of the amnion:—(1) Cases of plural births are occasionally met with in which one fœtus having been blighted, the fluid contents of its, enveloping amnion have disappeared; this the author would attribute to its *absorption* by the membrane itself. (2) Cases occur in which the liquor amnii presents a very altered appearance, all its sensible characters being changed, and instead of being transparent, thin, and inodorous, it is thick, turbid, and fetid. This is an instance of *perverted secretion*. (3) The quantity of the secretion may be enormously increased, or may be speedily replaced if it come away. These facts all concur in strengthening the analogy between the amnion and serous membranes, by showing that it can, under certain circumstances, *increase, absorb, or alter* its proper secretion.

The author thus sums up his views:—(1) Dropsy of the ovum certainly does *not* depend on any dropsical diathesis of the woman. (2) It may occur quite independently of any dropsical condition of the fœtus. (3) It is not constantly associated with any morbid condition of the membranes or placenta. (4) Nor has it any special relation with any abnormal condition of the fœtus. (5) That the cause is purely local may be inferred from the fact, frequently observed, that in plural pregnancies, where the disease existed, it was confined, in every instance, to one ovum only. (6) It has probably no connection with syphilis. In only one of the author's cases was the woman so affected. (7) The mother's recovery is affected by the disease. Of the 33 cases, 4 died, and putting aside two of these as resulting from accidental causes; viz., rupture of the uterus and epidemic puerperal fever, the mortality still remains 6·45 per cent.

Dr. Braxton Hicks relates three cases in which labour was obstructed by abnormal conditions of the fœtus ('Trans. of Obstet. Society of London,' vol. v, p. 285). -

In the first case delivery was impeded by great distension of the abdomen of the fœtus by ascites. Chloroform was given, and the parietes of the child punctured with the crotchet; about two quarts of fluid instantly escaped, and rapid expulsion of the child followed. The placenta was very large, ragged, and pulpy; on removal, it was found that the whole of the villi wanted cohesion. The author suggests that this condition arose from œdema of the placenta, and this view is supported by the fact that before the membranes broke a considerable quantity of bloody serum escaped. Both of the child's ureters were completely occluded near the bladder, for one third of their length; above this point they began to be distended till they reached the kidneys, the pelves of which, on both sides, were distended into cysts, having on one side a

diameter of three and on the other of two inches. The diagnosis of ascites in the fœtus before labour is difficult, and very liable to be mistaken for dropsy of the amnion. The second case was very similar. Enormous distension of the fœtal bladder was here the cause of the obstruction. In the third case there was immense distension of the uterus from dropsy of the amnion. The whole appearance of the abdomen closely simulated ovarian dropsy complicated with pregnancy, especially from there being a slight oblique depression between the middle and lower third of the tumour. Premature labour was induced at the seventh month by puncturing the membranes, upon which about three gallons of fluid escaped. When labour fairly set in, another bag, apparently of membranes, presented, and obstructed delivery; this proved to be a large fluctuating tumour, situated on the neck, tongue, and face of the fœtus, after puncture of which labour terminated naturally. The mothers in all three cases did well.

Hirsch ('Würzb. Medic. Zeitschr.,' Band iii, Heft 6) records the following case:—The first symptoms of pregnancy appeared in a woman æt. 38, in March, 1861. In July the uterus could be felt between the umbilicus and the pubes. A thin serous fluid exuded from the breasts. As labour did not come on in December, the author was summoned to examine the patient, and found her at the full term of a normal pregnancy. Within the uterus, which extended to the epigastrium, the fœtal movements could be distinctly felt. A progressive increase of the circumference of the abdomen occurred during the next five months, without the patient's health being affected. At the end of May, after a supposed pregnancy of fifteen months, feeble labour pains came on, with draining away of the liquor amnii, effecting, after three days, the complete dilatation of the os uteri. Unsuccessful attempts were now made to extract the head by the forceps. The author, now consulted, found the head movable at the entrance of the pelvis, with an opening in the skull half an inch in diameter. Proceeding to turn by the feet, the hand was arrested by a large, round, fluctuating tumour. The child was delivered by traction on the head, with the fingers introduced into the cavity of the skull; it weighed eight pounds, and was fully developed. In detaching the placenta the tumour was found attached to the fundus of the uterus. The patient died exhausted, a few hours after delivery. No post-mortem was permitted; but the tumour, which after death partly protruded through the vulva, was found to be as large as a man's head. Its external segment presented a smooth, firm, serous surface; and on cutting through its fleshy wall about half an inch thick, a large quantity of pale, serous fluid escaped, containing coagula, and a few shrunken, fleshy parts, resembling the rudiments of an embryo. The author supposes that, after the degeneration of the first impregnated ovum, and partial intergrowth of this with the substance of the uterus, a second conception had occurred, and the further development of the mole advanced with the normal development of the second impregnated ovum.

HÆMORRHAGE BEFORE, DURING, OR AFTER DELIVERY.

Dr. Ramsbotham relates five cases of severe post-partum hæmorrhage ("Clinical Midwifery;" 'Med. Times,' ii, 1863, pp. 245, 431). A large fibroid tumour imbedded in the posterior wall of the uterus, and preventing its perfect contraction, complicated one case, and in another, the only fatal case, the placenta was adherent to a large polypus attached to the fundus of the uterus. The author remarks that in most of the cases which he has seen of coexisting pregnancy and intra-uterine polypus, although hæmorrhage might have occurred before conception, this has been either entirely suspended or greatly lessened during utero-gestation. The case, however, now recorded was an exception to this rule, since the hæmorrhage increased after impregnation, probably from the placental attachment to the polypus.

In relating eight cases of adherent placenta (*ibid.*), the author states that his own practice is to remove the placenta at once if dangerous hæmorrhage occur, and never to wait longer than an hour or an hour and a half if there be no flooding. If part of the placenta be left, the hand should be again introduced, and all removed, since the patient cannot be free from danger so long as any part of the placenta be retained in utero. In one case, here related, profuse hæmorrhage occurred from the placenta of twins at three months being retained six weeks after the miscarriage. In all the cases the mothers recovered.

PLACENTA PRÆVIA.

Dr. Murphy records a case of placenta prævia, with detachment of the placenta before the birth of the child ('Dub. Quart. Jour.,' May, 1863, p. 472). *The hæmorrhage ceased at once.* From ten to fifteen minutes were occupied in the operation. Version was then performed, and though the child did not at first breathe, respiration was gradually established, and both mother and child did well. Dr. W. H. Moor relates a case ('Med. Times and Gaz.,' vol. i, 1863, p. 532) in which he separated the placenta from the sides and front of the os, and plugged this with the detached portions of the placenta and the unruptured membranes. Hæmorrhage ceased at once. Brandy and ergot were given, the labour terminated naturally, and the mother made a good recovery. The child, a seven months' one, was stillborn, but was restored by artificial respiration, and did well. About a third of the placenta was found to have been separated from its attachment to the uterus. Dr. G. Clendinning records four cases ('Australian Med. Journal,' July, 1863). In the first three delivery was effected by version. Two of the mothers and one of the children recovered. In the fourth case — with the patient almost pulseless — after the removal of the detached placenta, which partly protruded through the full dilated os, delivery was effected by the long forceps, and the mother did well. The child had been dead some time.

Dr. C. Pfeiffer, in a paper on "Crushing the Placenta" ('Mon. f. Geburt,' Sept., 1863), comments on the little value to be attached to

the statistics of lying-in hospitals in determining the comparative frequency of cases of placenta prævia, since these are much more commonly met with in multiparæ than in primiparæ, whereas the latter class form a large proportion of all the patients in lying-in institutions. The author thinks that this condition occurs at least twice as frequently as is represented in hospitals, and, from his own observations, finds the actual proportion to be about 1 to every 250 or 300 cases. While admitting the value of Dr. Barnes's plan of separating all that portion of the placenta which adheres to the cervical zone of the uterus, the author maintains that the hæmorrhage is arrested, not by the normal contraction of the uterus, but by the *crushing* or contusion to which the placenta and mouth of the womb are subjected by this process. The author's mode of practice—which seems entirely based on the hypothesis that the hæmorrhage arises only from the placenta—consists in introducing one or two fingers into the cervix, between the placenta and the uterus, and crushing the former as much as possible, while the uterine wall is lightly pressed. By this means, the hæmorrhage ceases at once, according to the author, and does not return again in the course of the labour, whether delivery is effected naturally or artificially, quickly or slowly, and the result is said to be most favorable to both mother and child.

Dr. Williams records a case in which the placenta was found partially detached and lying in the vagina, with profuse hæmorrhage. The placenta was removed, and hæmorrhage ceased at once; the child was delivered naturally two hours after, and the mother recovered well. ('Med. Times,' ii, 1863, p. 214.)

Prof. Schule, in some remarks on the management of the placenta, based on 300 observations, explains the method practised in the clinical institution.

This method is virtually the same as that long practised at the Dublin Lying-in Hospital, but seems to have been hitherto little known in Germany until Credé and Spiegelberg referred to it. Immediately after the expulsion of the head of the child the right hand is laid on the mother's abdomen, over the fundus of the uterus, and, with slight pressure, made to follow this down as it gradually empties itself. If the placenta should not be expelled after waiting ten or fifteen minutes, the fundus of the uterus should be firmly grasped—without any kneading or rubbing—and pressure made directly backwards, when the placenta, in the great majority of cases, will be found to have passed into the vagina, or even be expelled beyond the vulva. In all the 300 cases noted by the author the above method was practised with the best results. All the placentæ, without exception, were perfect, and had no trace of any separation or rupture, and the membranes were in all cases perfect.

Dr. Braxton Hicks records two cases of transfusion ('Lancet,' vol. i, 1863, p. 265). In the first case the woman, in whom there was no history of syphilis, had had six children, and with the last four

there had been adherent placenta. Immediately after natural delivery profuse hæmorrhage occurred from adhesion of the placenta; this was carefully removed, and the uterus contracted well. Half an hour after, jactitation and collapse came on, and, as a last resource, the author determined on transfusion. Assisted by the resident clerks, Dr. Hicks injected, at three instalments, about six ounces of the husband's blood, which was all that could be obtained. She rallied for a short time; but another attempt to procure more blood failing, she sank two hours after delivery. The second case was that of an ill-fed Irishwoman, æt. 38, mother of six children, who was attacked with immense hæmorrhage at the full term, and was very shortly in a state of collapse. The membranes were ruptured, and as the os gradually dilated she improved, but when fully dilated the pulse suddenly flagged. Transfusion from the husband was accomplished with difficulty, and about six ounces were injected. The pulse, before scarcely perceptible, could now be plainly felt, the jactitation ceased, respiration improved, and the voice became stronger. Dr. Hicks now with great ease performed bimanual version. The child was dead, and the placenta almost entirely detached. The uterus failed to contract, and in spite of the most unremitting support by stimulants, she sank before a second attempt at transfusion could be made. In both cases the funnel-and-syringe apparatus was used.

Mr. Thorne reports a case ('Lancet,' i, 1863, p. 266). In a few minutes after premature delivery of a dead child symptoms of internal hæmorrhage appeared, and pressure over the uterus was followed by profuse hæmorrhage. The placenta, now found nearly entirely adherent, was at once detached, and firm pressure made over the uterus, when all hæmorrhage ceased; the patient, however, was nearly pulseless, and in spite of free stimulation, became rapidly worse. Respiration twice ceased, but was restored by artificial means. Transfusion was now performed, but, owing to the loss of some blood, and the woman fainting from whom the blood was drawn, only about two ounces were injected into the patient's median cephalic vein; this, however, seemed just sufficient to stimulate the heart to renewed action, for immediately before the operation the pulse at the radial could scarcely be detected, whereas in ten minutes after, the pulsations of the temporal were very distinct. During the next six hours she had two injections of hot brandy and beef tea, and after this she was fed every quarter or half hour during the next forty-eight hours. All symptoms of reaction soon passed off; she was kept for ten days on strong fluid nourishment, and recovered well.

An interesting case of Transfusion for the relief of anæmia consequent on repeated attacks of uterine hæmorrhage is recorded by Dr. Braun ('Wien. Wochensch.,' 1863, No. 21). The patient, æt. 45, miscarried in August, 1862, and suffered from such severe metrorrhagia, from that time up to April, 1863, that her life became in most imminent danger from extreme anæmia. Dr. Braun therefore performed transfusion on April 22nd, and the result was most satisfactory. Scarcely an ounce of blood was injected when the patient, who had before been most exhausted, recovered some of her colour, and declared herself better, and

the pulse at once became full and strong. She rapidly improved, and a week after the operation seemed quite well.

Dr. Lumley Earle believes that distension of the bladder is not an unfrequent cause of primary post-partum hæmorrhage, and urges that the catheter should be used in all cases where great and unusual suffering exists, with disproportionate severity of the pain to the progress of labour. ('Trans. of Obst. Soc. of London,' vol. v, p. 294)

Dr. Graily Hewitt, "On the Operation of Transfusion in Obstetric Practice" ('Brit. Med. Journ.,' ii, 1863, p. 232).

Taking the reports of the Registrar-General for several years, the author finds that the number of deaths in England and Wales from accidents during childbirth average nine per diem, and of these at least one is caused by hæmorrhage. In many of these cases all remedies short of transfusion will fail, and it is, therefore, the more remarkable that the operation is not more frequently practised. The author answers the objections urged against the operation, and thinks that the obstacles to its more general adoption arise from (1) a disbelief in its efficacy, (2) the difficulty of deciding on the indications, or (3) the difficulty in its performance.

Under the first head the author cites Prof. Martin's series of cases.* Of 57 cases collected by this author, 43 were successful. In 7 of the unsuccessful cases, however, death occurred some days later from return of hæmorrhage, or from phlebitis, which gives a mortality of only 7 in 50, or 86 *per cent.* recoveries. (2) The indications for the operation are absence of power to swallow, with the symptoms of collapse, and especially if to these be added dyspnœa, jactitation, and convulsions. In the great majority of cases, where the patient is able to swallow, recovery will follow the free administration of stimulants. In two cases mentioned by the author more than thirty ounces of brandy were given in less than two hours, with a successful result in both cases. Absence of pulsation at the wrist appears to be, taken alone, one of the most positive indications for the operation; but it does not follow that because pulsation is felt the operation is not required; and extreme feebleness, combined with great rapidity of the pulse, is, in some cases, as strongly indicative of the necessity for the operation as its complete absence in other cases. The operation is not indicated unless the hæmorrhage and the tendency to it have ceased. The exceptions to this rule are cases like Dr. Waller's, in which placenta prævia existed, and the patient was so much exhausted from loss of blood that the attempt to deliver her would probably have been fatal. Here transfusion was performed in order to enable the patient to bear further manipulation. But there are some cases of post-partum hæmorrhage in which this seems to defy all attempts at arrest; and here, unless the hæmorrhage be stopped, transfusion is useless. In these obstinate cases the author has found Dr. Hamilton's plan successful. The uterus is closely compressed between the two hands, one hand being in the vagina, and the other grasping the uterus from above, and this compression maintained for some time. (3) The difficulties in the performance of the operation are carefully

* 'Ueber die Transfusion bei Blutungen Neuentbündener,' Berlin, 1859.

considered, and simplified by a convenient apparatus, invented and described by the author. Dr. Hewitt thinks that pure blood should be used, and cites Dr. Brown-Séquard's statement, that the introduction of defibrinated blood has, in animals, induced sudden coagulation of the blood and death. The opposite opinion, however, is held by Bischoff, and in an interesting case recorded by Prof. Nussbaum ('Baier Int. Pl.,' No. ix, 1862, and 'Year-book,' 1862, p. 253) transfusion was successfully performed with defibrinated blood. Dr. Hewitt insists on the importance of previously arranging all the steps of the operation, and gives minute directions for its performance, especially urging the avoidance of all delay, and the prevention, as far as possible, of exposure of the blood to the air.

RUPTURE OF THE UTERUS.

Spontaneous rupture of the uterus only occurred 11 times in 59,859 cases of delivery at the large Maternity Hospital at Paris, or once in 5441 cases (Casper 'Forensic Med.,' vol. iii, p. 401). A case is recorded by Heer ('Preuss. Med. Zeit.,' 1862, No. 31). The patient, from her suffering in a long, protracted labour, requested to be taken into the Lying-in Hospital at Oppeln, for the purpose of being delivered. Here she arrived in great agony, after nearly two hours' drive in a bad carriage, by night. On admission she was pale, pulseless, with cold extremities, the body covered with a clammy sweat; the contour of the uterus could not be felt, while the parts of the child could be very distinctly recognised, and labour pains had ceased. She died directly after she had been put into bed, and before even any examination could be made. The forceps were at once applied, and a dead child extracted without difficulty; profuse hæmorrhage followed. Post-mortem, the anterior wall of the uterus was found ruptured to the extent of about five inches.—Hugenberger relates three cases ('St. Petersburg. Med. Zeit.,' 1862, Heft 16). Case 1.—In a well-formed multipara, after three days' labour, and the escape of the liquor amnii, the child's face was found presenting at the brim. Four hours after admission into the hospital the woman died suddenly, with sudden and great distension of the abdomen. After a fruitless attempt at extraction by the forceps, the dead child, whose long diameter of the head was nearly five inches, was removed by the Cæsarean section from the apparently unruptured uterus; but during the operation between two and three pounds of blood escaped from the abdominal cavity, and post-mortem, a rupture to the extent of about three fifths of an inch, with friable edges, was found in the posterior wall of the uterus, corresponding to the promontory of the sacrum. Case 2.—Here the rupture was occasioned by a fall upon the edge of a table, the fœtus passed into the cavity of the abdomen, and the woman died on the spot. Case 3.—In a third case the rupture occurred with the simultaneous passage of the child into the abdomen. The child was delivered through the rent thus made, and both mother and child recovered.—Three cases are also related by Niemann ('Henke's Zeitschr. f. d. Staats.,' 1862, Heft 4). Case 1.—After an easy labour and natural delivery, the placenta

was retained four days, and a rupture of the posterior wall of the uterus, "several inches long," occurred, through which a convolution of intestine had passed. During the fruitless attempts to detach the placenta the intestines protruded *en masse*. Vain attempts having been made to replace them, they were cut off with a pair of scissors! The patient died thirty-eight hours after. The thickness of the uterine wall, near the seat of rupture, was found, after death, diminished from half an inch to two lines. In another case, a short time after the natural birth of a child, a midwife introduced her hand into the vagina, in order to remove the placenta, tore off the funis, and, after the woman had uttered a loud scream, brought away a convolution of intestines, of which part of the large intestine was torn off. Three days after, the patient died. After death a large rent of the uterus was found at its junction with the vagina. The muscular tissue was firm and normal in structure.—Dr. Olshausen publishes a paper on ruptures of the uterus, and especially on that form of rupture which results from prolonged kneading and compression ('Mon. f. Geb.,' October, 1862).

LACERATION OF THE PERINÆUM.

Mr. Bryant records three cases, with successful operation in each ('Lancet,' ii, 1863, p. 702).

Dr. C. Ricketts recommends the adoption of the following plan in forceps cases. When the forceps have been applied, and the head of the child has been brought down so low on the perinæum that the forefinger, introduced into the rectum, can reach, in occipito-anterior presentations, beyond the frontal eminence, the instrument should be withdrawn, or all traction discontinued, and the finger, still retained in the rectum, should be used like the vectis, pressure being made with it on the forehead, upper jaw, and chin, as these parts can be felt. The head is thus made to rotate in the axis of the outlet, and being directed forwards under the pubes, its pressure on the perinæum is greatly relieved. ('Med. Times and Gaz.,' i, 1863, p. 415.)

OPERATIONS IN MIDWIFERY.

ON THE INDUCTION OF PREMATURE LABOUR.

Dr. Storer, of Boston, in a pamphlet 'On Artificial Dilatation of the Os and Cervix Uteri by Fluid Pressure from above; a reply to Drs. Keiller of Edinburgh and Arnott and Barnes of London,' gives a résumé of the history of all the methods employed for dilating the os uteri. Putting aside the measures of Hüter and Braun for inducing premature labour by dilatation of the vagina, it is to Arnott and Gariel that belongs the credit of first suggesting the possibility of dilating the cervix by fluid pressure *from below*; while in dilating the uterus by fluid pressure *from above*, although the author's instrument was already prepared for the purpose, Dr. Keiller really anticipated him by a few days in actual practice. As regards priority of publica-

tion, however, Mr. Jardine Murray forestalled both. To Dr. Barnes belongs the merit of forcibly presenting the subject to the profession at a later date, of endeavouring by modification of the first instruments to perfect one for practice, and of adopting the author's proposal of water as the dilating medium. The author, after referring to the value of elm-tents, which he first introduced to the profession ('Assoc. Med. Journ.,' May, 1855, p. 446), and which he thinks greatly superior to sponge, in those cases where a slow and moderate action is desired, as in mechanical dysmenorrhea and certain forms of sterility, remarks:—"There is no doubt that in the induction of premature labour by the injection of water between the membranes and the uterine wall, after the method of Schweighauser and Cohen, there is some liability of effecting an unfavorable change in the presentation of the child, as in two cases related by Dr. Priestley, and of inducing hæmorrhage by partial separation of the placenta. It is also possible, as in two cases related by Dr. Simpson, that rupture of the uterus, from excessive distension, may thus be produced." These objections do not, however, apply to the author's mode, since the extent of separation of the membranes, of dilatation of the cervix, and of distension of the uterus, by the enclosing sac which he has proposed, can be perfectly controlled.*

Dr. Robert Lee advised the induction of premature labour in a lady suffering from disease of the retina and albuminuria. This was not at once adopted, but after a short time a convulsion occurred, and it was then determined not to delay the operation. Amaurosis, albuminuria and œdema of the face were now present. The membranes were punctured, labour ensued, and a dead fœtus of four months was expelled. After this the albumen gradually diminished and vision improved. The particulars of an analogous case are added. ('Med.-Chir. Trans.,' vol. xlv, 1863.)

Dr. Barnes records a case of induction of labour by his method at the eighth month of pregnancy. Incessant vomiting had persisted from the commencement of pregnancy, and she had suffered from hæmatemesis and menorrhagia. Examination revealed a nodular induration of the cervix. Labour was induced and delivery of a living child effected in less than four hours. ('Lancet,' vol. i, 1863, p. 10.)

Prof. Giordano, of Turin ('Omodei's Annali,' vol. clxxxii, p. 407), states that premature labour may be much more effectually induced by the application of the solid nitrate of silver to the cervix uteri than by any other mode. Having introduced it within the cervix, he imparts to it slight, but repeated, rotatory movements, in order to thoroughly cauterize most of the internal surface. While most of the other plans proposed are difficult, inoperative, or even dangerous, this mode is easy of execution, prompt and complete in its results, and is followed by no ill consequences. A case is related in which cauterization was performed, on account of deformed pelvis, at 9 a.m. on one day, and the fœtus was expelled at 8 a.m. the following morning, and the placenta followed in an hour afterwards.

* For a description of the caoutchouc bags introduced, and employed by Dr. Barnes, see 'Year-book' for 1862, p. 355.

Scanzoni ('Lehrbuch der Geburtshülfe,' p. 730), on the authority of Marinus, Ritgen, Stolz, and Kiwisch, states that "artificial labour should be employed when the dimension of the conjugate diameter of the brim is abnormally small," and minutely indicates the time for performing the operation by the following schedule.

		Inches.	Lines.		
When the sacro-pubic diameter is 2 and 6 or 7, induce labour at 30th week.					
"	"	2	" 8 or 9	"	31st "
"	"	2	" 10 or 11	"	32nd "
"	"	3	—	"	33rd "
"	"	3	" 1	"	33rd "
"	"	3	" 2 or 3	"	34th "
"	"	3	" 4 or 5	"	35th "
"	"	3	" 5 or 6	"	36th "

Scanzoni remarks that the necessity for inducing premature delivery may be argued from the fatality resulting to the children previously born, whether caused by compression of their heads when excessive in volume or by a contraction of the pelvis; this is conditional, however, as a subsequent child might be smaller, and with ease and safety pass through a diameter of three inches or three and three quarters of an inch.

FORCEPS.

Dr. J. Cronyn, "Report of Cases of Delivery by the Forceps in the Rotunda Lying-in Hospital, from June 1st, 1862, to April 1st, 1863" ('Dublin Quart. Jour.,' Nov., 1863). During the above period the forceps were applied in 26 cases out of 856 patients delivered in the hospital, being a little more than 3 per cent. Results to the mothers and children:—In 17 cases *both* were saved and in 1 *both* were lost; in 5 cases the mother died and the children were saved; in 3 cases the mothers recovered and the children were lost. Seventeen of the number were primiparæ; 5 in labour of the second child, 1 of the third, 2 of the sixth, and 1 of the seventh. Of the 26 cases, in 18 the forceps were applied for inertia, in 6 for disproportion, and in 2 for convulsions. Of the 6 mothers who died, 2 were from uterine phlebitis, 2 from metro-peritonitis, 1 from peritonitis and pneumonia, and 1 from puerperal scarlatina. Of the children, 6 were stillborn, and in 4 cases the foetal heart was inaudible. In addition to these 26 cases, the forceps were ineffectually applied in 3 other cases, in which craniotomy was afterwards resorted to.

Dr. Murphy, ('Dublin Quart. Jour.,' May, 1863,) endeavours to determine the vexed question as to whether the maternal mortality is lessened by the employment of the forceps. This he does by comparing the results where the forceps had been used to conclude labour and where it had been allowed to proceed in a protracted course and terminate without assistance. For this purpose, three reports of the Dublin Lying-in Hospital are analysed, which are especially valuable, since they give the results of opposite modes of practice under the same circumstances. The following are the total results of these reports, by Dr. Collins, Drs. Hardy and McClintock, and Drs. Johnston and

Sinclair:—The total number of cases was 37,036. Of these, 742 women, having labour protracted beyond twenty-four hours, were delivered without aid; 46 died, being nearly 1 to 16; of the children, 162 were lost, being 1 to 4.6. The women delivered by the forceps were 248, and of these, 20 died, or 1 in 12.4; 50 children delivered by the forceps were lost, or about 1 in 5. So far, therefore, as the general results are concerned, the maternal mortality in protracted labour will bear comparison with that where the forceps were employed. In both instances the maternal mortality is higher than the average, because it was impossible to separate the cases of puerperal fever from ordinary labours. To place the question, however, in the clearest light, the practice of Dr. Collins, who only used the forceps once in 694 cases, may be compared with that of Dr. Shekleton (Johnston and Sinclair's report), who used them once in 68 $\frac{3}{4}$ cases. Both were in charge of the same hospital and of similar cases. The deaths of mothers delivered without forceps, in protracted labours, were 1 in 16 (Dr. Collins's report). The deaths of mothers delivered with the forceps were 1 in 18 ('Drs. Johnston and Sinclair's Report'). If this difference on the one side be compared with that on the opposite—1 in 12.4—from the total results, it may be said to disappear; proving that in cases of difficult labour, which are of necessity protracted, mere duration does not increase the mortality.

From the fairest review of statistics which the author can make, he shows that in difficult labours, where so much judgment is required, there is no essential difference in the maternal mortality whether the forceps be used or not. The deaths of the children are also alike, being about 1 in 5 cases.

Dr. Barnes, in a paper "On the Midwifery Forceps" ('Lancet,' vol. ii, 1862, p. 31), points out the objections to the short straight forceps.

The instrument by which Dr. Barnes proposes to remedy its defects is similar to, but less powerful than, the French forceps of Dubois and Pajot, and resembles that of Mr. Robertson, of Manchester, with these advantages—that it is equally adapted for application at the brim, cavity, or outlet, and that it diminishes the risk of laceration of the perinæum.—Dr. Gayton proposes to secure the handles of the forceps during delivery by joining them on the rack-and-spring principle ('Med. Times and Gaz.,' vol. ii, 1863, p. 218).

TURNING.

The following is an abstract of a memoir by Dr. J. Braxton Hicks, "On Combined External and Internal Version" ('Trans. of Obstetrical Society of London,' vol. v, pp. 219—259):

Until within the last few years, in effecting version of the child, the whole hand was introduced into the uterus, in order to seize the part to be brought down. The unavoidable delay occasioned by this mode of practice, and the suffering often induced by it, proved in many cases grave objections to its employment. Dr. Collins and Dr. R. Lee have pointed out that in some cases of transverse presentation it is not necessary to pass more than two fingers into the os uteri in order to

seize the knee. But in Germany it has been shown for some years past by Wigand, Mattei, Stoltz, Martin, and Carl Esterle, that it is possible to rectify entirely from the outside abnormal positions of the fœtus, and by the last two professors it has been employed in many cases. But Carl Esterle seems to have principally adopted this method some weeks before labour was expected, and Martin insists in its use—1st, that immediate delivery be not called for; 2nd, that there be a capacious pelvis; 3rd, *no active pains*; and 4th, that the child be living. Now, it is evident that these conditions cannot be granted if we wish to practise this method in the midst of labour or in urgent cases. Indebted, then, to the Germans for the discovery of the mobility of the fœtus from the outside, and to our own countrymen for the plan of pushing on the child by one or two fingers through the os, the author proceeds to show how, by the simultaneous application of these two plans, each acting upon opposite ends of the fœtus, a degree of certainty and celerity may be obtained, of which each alone is entirely incapable. The principles upon which the author's plan is based are—1st. The mobility of the child in utero, varying according to the activity of the uterus. 2nd. The fact that in transverse presentations the knee is almost immediately over the os uteri, and that the foot is close to the breech, and will be found upon it when this presents. 3rd. The ease with which, in transverse presentations, the head can be directed either back to the os or to the fundus of the uterus. Podalic version of the child, in ordinary head presentations, is effected by pressing on one side of the breech at the fundus by a series of gentle palpations, or by a gliding pressure on the abdominal parietes, so as to follow up the fœtus as it recedes under the impulse, by the continuance of which the breech is brought to the middle of the uterus on one side; at the same time the head is pushed up by one or two fingers in the os, so as to raise it above the brim to the middle of the uterus on the other side. The child being thus more or less transverse, the knee can, in most cases, be easily seized; if not, the breech must be depressed still more, and the foot secured. Turning will sometimes be simplified if, as soon as the head is above the brim, we pass the outside hand beneath it, and push it up from the outside alternately with the depression of the breech. If the os will only admit one finger, the foot can yet be retained by pressing it with that finger against the anterior part of the os, because here the pubes will assist in supporting the pressure. Supposing the position cannot be distinctly made out, if the head be placed at some distance from the centre of the os, then the head should be pressed to that side to which it inclines, and the breech to the opposite; but if the head be nearly central, and the position be not known, then the breech should be pressed towards the right side and the head to the left. In the early stage of transverse presentations the case will generally be the easiest of any requiring version, and here the external depression of the breech is so effective that the necessity for introducing the whole hand is, in most cases entirely avoided; but where the arm is prolapsed beyond the vulva, and the thorax jammed into the cavity of the pelvis, the old method should be adopted, though even in the worst cases the external depression of the breech is of great advantage.

When the arm has not prolapsed so far, the attempt should be made to return it on to the chest of the child, and then to push the child onward in the direction of the head, depressing the breech externally if podalic version be intended; but since the greatest value of this mode is the capability of version long before it can be performed by any other method, extreme cases will seldom occur to a vigilant practitioner. Cephalic version, which adds to that of Wigand's the more extended use of the inner hand, and which the author has found most useful in some cases of transverse presentation, is thus effected:—With the left hand in the vagina, as in podalic version, and the right over the uterus, the shoulder is first pushed on in the direction of the feet by the inner hand, while at the same time pressure is made on the cephalic end of the child, which will bring the head down close to the os, and allow it to be secured between the two hands. The head is then placed directly over the os, and any tendency to face presentation at once rectified, while the external hand is retained on the head till the uterus has moulded itself to the form of the head and shoulders. The ease with which cephalic version was effected in this way in one of the cases related by the author was such that only half a minute was required; but if there be any difficulty in this, podalic version is still feasible. All that is required is to place the hand on the opposite end of the child and depress it, pushing the head and shoulder from within, while the fingers in the os are ready to hook down a knee or foot; and, as a rule, in neck and transverse presentations, where all the conditions are favorable, cephalic version should first be attempted, and, failing this, podalic version may be effected. The advantages of early turning, whether for a cephalic or podalic presentation, in cases of neck, shoulder, and transverse presentations, will be manifest, while it is not less valuable in cases of convulsions ante partum. Here the introduction of the hand into the uterus is frequently attended with much danger, while by this method we shall be able to take advantage of the earliest dilatation of the os, and assist it by gentle traction upon the leg, which will thus act as a dilator. In placenta prævia the easy application of this mode of turning is shown by the author in a series of eight cases. It is especially valuable in those cases where, with great hæmorrhage, the os is yet so little dilated that not more than one or two fingers can be introduced. Here the author's practice is to rupture the membranes when the foot arrives at the os, and then, *without any force* to draw the foot and leg through. By exerting gentle traction *with merely the weight of the arm*, the leg is retained and forms a good plug, while valuable time is gained to rally the patient, for the os to dilate, and the pains to come on. Except in cases of internal hæmorrhage, the author waits for the natural efforts to deliver, and has never seen any hæmorrhage, internal or external, after the leg has been brought down. Should the placenta lie more or less completely over the os, the membranes will generally be found by detaching the placenta on that side which is least thickened; otherwise the method recommended by Dr. Barnes, of detaching the placenta all round till the membranes are reached, is the best. The advantage of turning under chloroform is very marked, but at least half the cases related by the author were performed

without, and were amongst the most successful. Twenty cases are related, including eight of placenta prævia, as illustrative of the author's mode of version; all were cases of great urgency, and in most, the old method of version would not have been practicable. In one case of profuse accidental hæmorrhage, transfusion was employed with so good a result, that version was performed in half a minute, and delivery accomplished, but the patient, unfortunately, died from exhaustion half an hour afterwards.

The advantages of this method of turning are summed up by the author under two heads—(a) those of avoidance, and (b) those of acquisition.

(a) We avoid the addition of the hand, and perhaps of the arm to the uterine contents, with the present and future chances of irritation caused by it; the entry of air into the uterus; the liability to rupture of the uterus, the pressure being opposite to that of the ordinary method; much of the pain and distress felt by the patient in the old plan; much of the fatigue and distress felt by the operator by the pressure of the uterus during contractions, and the increase of collapse by the presence of the hand in cases of severe exhaustion.

(b) On the other hand, we shall gain—1, The opportunity of correcting malpresentations as soon as they are recognised; 2, the capability of early delivery; 3, the opportunity of using the child as a compress in placenta prævia; 4, the capability of version at a time when the old method is impracticable; 5, the opportunity of producing cephalic version much more readily than formerly.

The difficulties liable to occur in performing this plan of turning are:—*first*, the doubling up of the fœtus upon itself, as in protracted transverse presentations, especially where the arm has been long prolapsed. If to this condition be added a very active uterus, the difficulty is still further increased, and here the breech should be depressed as much as possible externally, and the hand introduced as far as is necessary to reach the knee, which, by the effort, has generally been brought down at least half the distance towards the cervix. *Second*. The firm and active contraction of the uterus upon the fœtus. Here chloroform should be inhaled to its full extent, and should it suspend uterine action for only a few minutes, in the majority of cases version may be effected without the hand in the uterus, except in the first-mentioned cases. A *fourth* difficulty may be the excessive mobility of the child, which is seldom met with in labour at full term, but will be found in premature labour, especially if the child be already dead; and this difficulty may be increased by *excess of liquor amnii*, which, however, may at once be removed by rupturing the membranes. *The operation should be performed methodically, and without any confusion or hurry.* No indications of metritis have ever been seen by the author after this plan of version, and if such a sequel threaten, the pressure required, and the kind of motion to be produced, will not have been understood. Dr. Hicks believes that the above mode of version will succeed in 75 per cent. of all the cases requiring it, and the earlier it is performed the greater will be the resulting success.

CÆSAREAN SECTION.

Dr. Ludwig Winckel, on fifteen cases of Cæsarean section ('Mon. f. Geburt,' July and October, 1863). From the remarkable prevalence of osteomalacia and rachitis in his district, Dr. Winckel has performed the Cæsarean section thirteen times in twenty-two years, besides assisting in the operation twice. Of the fifteen cases, the deformity of the pelvis arose from osteomalacia in nine cases, and from rachitis in six. The patients all belonged to the very poorest class, and were most unfavorably situated in every respect; most being dependent upon public charity, and some on parochial relief. Among other difficulties encountered by the author was the great distance at which many of the patients lived, and hence the most favorable period for operation was often missed, and the after treatment materially affected. With regard to the operation itself, Dr. Winckel thinks that it is essential to its success that no previous attempts at delivery shall have been made. The most favorable period for operation is the end of the first stage, with the membranes unruptured. About this time the uterus has attained its greatest expansion, its activity is well developed, and the evolution of the child will be easiest. Little or no fear need be entertained of the escape of the liquor amnii into the abdominal cavity as in three of the cases where this occurred no unfavorable result followed. In all but four of the cases, the operation was performed under chloroform, which in no case produced any injurious effect. The author thinks it very important to open the uterus as near the median line as possible, and especially urges the avoidance of the fundus, from the great liability of wounds of this part to gape widely. Protrusion of the intestine is prevented by drawing closely together the corresponding angles of the uterine and abdominal wound; by this simple method, all internal sponging (Von Graefe) and preliminary sutures (Autenrieth and Zang) are avoided. Hæmorrhage after the uterus is emptied is most easily checked by immediate compression with the hand, and hence the abdominal wound should not be closed until the uterus has firmly contracted. By adopting this plan, the author has not lost any patient from hæmorrhage. After all hæmorrhage has ceased he closes the abdominal wound by the "*sutura cruenta*;" and into the lower angle of the wound places a narrow strip of linen, soaked in oil; which is directed backwards towards the uterus to favour the discharge of any secretions. He considers that complete closure of the abdominal cavity is very important, but that the presence of a little blood in it is of little or no consequence. After the completion of the bandaging, an examination per vaginam is made to ascertain the condition of the os, and remove any coagula, for the successful issue depends not a little on the uterine secretions all passing by their natural outlet from the beginning.

In the after treatment the importance of great cleanliness, frequent change of bandages, except the first bandage (which the author prefers to keep on until the fourth or fifth day), and the internal exhibition of opium are insisted upon.

The troublesome and distressing meteorismus is best relieved by

enemata and small doses of Dover's powder. The much-extolled application of ice the author was never able to test.

The following are the results of the 15 cases. Of the mothers, 8 died and 7 recovered; while of the children, 8 were born alive and 7 dead. One patient was operated upon twice, but died after the second operation; and, on another patient, Dr. Winckel operated *three* times successfully; on the last two occasions rupture of the uterus occurred prior to the operation, and the child was both times removed from the abdominal cavity. Eight months after the operation, the patient is said to have died of parotitis.

These cases show how much more unfavorable osteomalacia is for the operation than rachitis. Of the 9 patients operated on for osteomalacian deformity of the pelvis, 6 died, or 66 per cent.; while of the 6 rachitic women only 2 died, or 33 per cent.; and these results would probably have been more favorable if the selection of the period for operation had been dependent on the author.

A case is recorded by Professor Breslau with dilatable osteomalacic pelvis ('Mon. f. Geb.,' Nov. 1862); M. Schulze ('Mon. f. Geb.,' July, 1863); M. Heillmann, successful ('Deutsche Klinik,' No. 31, 1863); M. T. J. Freericks, of Bussum, a case with successful result for mother and child; a year later, induction of premature labour, and rupture of the uterus, with successful gastrotomy ('Schmidt's Jahrb.,' No. 3, 1863); Dr. Taussig, two successful cases ('Med. Times and Gaz.,' ii, 1863, p. 377); Prof. Hecker ('Aertz. Intell. Baiersch.,' Aertz. 9, 1862); Dr. Swayne ('Lancet,' i, 1863, p. 606); Dr. Greenhalgh ('Lancet,' i, 1863, p. 204).

CEPHALOTRIPSY.

Prof. Pajot, in a memoir on "Cephalotripsy repeated without traction; or, a method for delivery in extreme contractions of the pelvis" ('Arch. Gén. de Méd.,' May, 1863), shows that in many cases the Cæsarean section may be avoided by the use of the cephalotribe being extended to cases of greater pelvic contraction than those to which it has hitherto been limited. In ordinary contractions—those between two and a quarter, and three and three quarter inches—cephalotripsy succeeds well, and not more than two or three applications of the instrument need be made. But an objection to it is, that it compresses the head in the transverse diameter when the contraction is in the antero-posterior, so that the long diameter of the head is opposed to the short diameter of the pelvis; this defect may, however, be partially corrected by imparting to the head, during traction, a slight rotatory movement. But in extreme contractions, as those between one and a quarter, and two and a quarter inches, cephalotripsy is as dangerous to the mother as the Cæsarean section. Here, the difficulty or impossibility of reaching the base of the cranium with the instrument, the disproportion between the passage and the head, the repeated tractions, necessary, and often fruitless, to deliver the child, the lacerations, and death, which

often result, sufficiently explain why the Cæsarean section should be preferred. Professor Pajot, however, uses the cephalotribe with success in cases where the contraction measures only one and a quarter inch. As soon as the os is sufficiently open to admit the instrument, the cephalotribe should be applied, with the head fixed by pressure in the hypogastrium, and the handles of the instrument carried well backwards, and the blades pushed as deeply as possible, so as to bury the joint in the orifice of the vagina. All this is necessary to crush the base of the skull. On this first cephalotripsy the success of the whole operation depends. The first crushing effected, a movement of rotation is made with the instrument, in order to place the lessened dimensions of the head in the contracted diameter of the pelvis, carefully moving to the right or left to find the direction where there is most room. If there be any resistance, rotation must be desisted from altogether. The uterus almost always moulds the new form thus given to the head by crushing to the shape of the canal, by imparting that rotation which was difficult with the instruments. The head having been crushed as much as it can be, the instrument is disjointed and withdrawn *without having exercised any traction*. A second, and, if necessary, a third introduction and crushing is effected, but always *without traction*. The patient is then left. According to her condition, M. Pajot repeats the crushings every two, three, or four hours; and the head being well broken up, one or two more crushings will generally suffice for the trunk. The distinguishing character of this operation is the absence of all traction, the object being to effect the progressive diminution of the parts in proportion as the uterine contractions mould the crushed head, and so direct it in the direction most favorable to enable it to pass through the contractions. The author relates 7 cases in which this method was practised. In 4 of these the antero-posterior diameter measured only six centimetres (about two and a quarter inches); and in the 3 remaining cases the contraction was less than two inches. In 6 cases the fœtus was expelled, in 1 the woman died undelivered, and another died after the operation. The remaining 5 recovered. ('Brit. and For. Med.-Chir. Rev.,' July, 1863.)

PART II.—DISEASES OF WOMEN.

PHYSIOLOGY.

Dr. Lissner records a case of congenital absence of the uterus. The patient, æt. 35, was married thirteen years, without children. Menstruation had never appeared, but molimina menstrualia had recurred every three weeks from her seventeenth year. With a catheter in the bladder and the finger in the rectum, no intervening body could be felt; and in spite of the periodical molimina, no swelling was found above the vagina (hæmatometra), the pelvis resembled that of the male, and there was complete sac-shaped closing of the vagina. ('Mon. f. Geb.,' December, 1862.)

M. Gubler, "On Uterine Hæmorrhages, and their relations to Menstruation" (*Gaz. des Hôp.*, Sept. 1863), states that the sanguineous discharge from the uterus which not uncommonly occurs at the commencement of, and during the progress of acute diseases, is merely analogous to the epistaxis which occurs in the early stage of fevers.

M. Gubler cites the following case, to show that the sanguineous discharge is merely an accessory circumstance of menstruation. A woman of general good health, æt. 23, died in the Beaujon Hospital, from acute meningitis. She had never had any menstrual discharge, but after death the ovaries were found well developed, and contained corpora lutea. There were eleven in the left ovary and six in the right. In the left ovary there was a recent corpus luteum, and the vesicle still contained a small clot of blood. On the other hand, the discharge may take place independently of ovulation, or continue beyond it; for discharges regarded as menstrual occur in circumstances where ovulation is impossible, as in girls not arrived at puberty. M. Gubler relates a case which seems to show that in some circumstances the same cause may bring about ovulation, and the discharge of blood, without one of these being necessarily subordinate to the other.

In a young woman attacked with cerebro-meningitis, the menstrual discharge began with the first symptoms of the disease, and continued till her death, on the tenth day. The autopsy showed perfect cicatrization of the follicle, and the formation of a corpus luteum, corresponding with the presence of recent clots in the uterine cavity. Here was well shown the separation between the two orders of menstrual phenomena; the evolution of the Graafian vesicle, and its rupture, with the discharge of a mature ovum; and, on the other hand, the congestion of the utero-ovarian vascular plexuses and of the uterine cavity, with the discharge constituting the menstrual flux.

NON-PUERPERAL PELVIC INFLAMMATION.

Under the head of "Pelvic Inflammation and Abscess in the Non-Puerperal State," Dr. McClintock (*Clinical Memoirs*, pp. 36—52) groups together an important series of cases, including many which differ materially in their character, from the cellulitis of the puerperal state. Two forms of the disease may be recognised: a primary, or idiopathic—the more rare in occurrence, and the more apt to have a distinct, if not an acute, mode of invasion; and a secondary, or symptomatic, generally consecutive, upon some uterine or ovarian disease.

Twelve cases are related. Of these, 6 were primary and 6 were secondary. Of the former, the attack was induced by an ill-adjusted or over-large pessary, in 2 cases, "and this is not an uncommon cause;" while in a third, excessive coition seems to have been the exciting cause. In 3 of these cases the inflammation had its seat in the cellular tissue around the cervix uteri, and were strictly examples of the "peri-uterine phlegmon" of Becquerel. Of the latter class the pelvic inflammation was secondary to fibrous tumour of the uterus in 3 cases, to uterine polypus in 2 cases, and to peritonitis in 1 case.

Of the primary cases, 5 recovered and 1 died. Of the secondary

cases, 1 recovered and 5 died. These cases, though few in number, forcibly illustrate how insidious and dangerous pelvic or abdomino-pelvic abscesses may be, and how important is their correct diagnosis; especially if any operation, such as the removal of a polypus, be contemplated.

The symptoms which should excite suspicion are a persistent hardness and swelling in one or other iliac region, not distinctly referable to uterine or ovarian enlargement, with persistent uneasiness and more or less tenderness on pressure.

Among the points of difference between the pelvic abscess of the puerperal and of the non-puerperal state, may be noted—1. The far greater frequency of the abscess bursting into the peritoneal cavity in the latter than in the former case. No such accident ever occurred, in the author's experience, of pelvic abscess succeeding to parturition, while of the six fatal cases here recorded, three terminated in this way;—2. The much greater frequency with which the pus is discharged per rectum or per vaginam in the *non*-puerperal pelvic abscess, and the extreme rarity of the abscess pointing *externally* in this class of cases;—3. The far greater danger of the non-puerperal pelvic inflammation, and hence the more guarded prognosis. This latter is contrary, however, to the opinion of many French authors, who maintain that the puerperal disease is more dangerous than the non-puerperal. The apparent discrepancy may be reconciled by the primary or idiopathic form of the latter being only included in the comparison, and not the secondary.

AFFECTIONS OF THE OS AND CERVIX UTERI.

Dr. Barnes relates an interesting series of cases of occlusion of the uterus or vagina at different periods of life. "On Amenorrhœa and Hæmatometra" ('Med. Times and Gaz.,' vol. ii, 1863, p. 401). Of the two cases of hæmatometra, one arose from an imperforate hymen in a young girl, and was cured by operation.

In these cases the author strongly advocates the *gradual* evacuation of the uterus, in opposition to the *sudden* artificial emptying by compression and washing out; and he therefore simply removes the obstructing barrier, and leaves the uterus to empty itself, only giving it support by applying a compress and binder to the abdomen. In the second case the retention of blood in the uterus arose from complete atresia of the vagina by cicatrization, probably during the healing of venereal sores. The vagina was with difficulty opened up by two operations, and the uterus allowed to empty itself naturally. Two others were cases of amenorrhœa; one with congenital absence of vagina, and the other with undeveloped uterus; and in two more cases procidentia of the uterus existed, with complete occlusion of the os uteri.

Dr. Tracy records a case of undeveloped uterus ('Australian Med. Journ.,' January, 1863), where the development was stimulated by the use of galvanic intra-uterine pessaries.

Dr. Barnes relates a case of hypertrophic elongation of the cervix uteri, in which cauterization failed. Amputation was performed by Dr. Marion Sims' method, with successful result. ('*Med. Times and Gaz.*,' vol. i, 1863, p. 7.)

M. Jobert distinguishes between congenital elongation and hypertrophy of the cervix from disease, and recommends cauterization by the hot iron, especially for the first condition. ('*L'Union Méd.*,' July, 1863.)

VERSIONS OF THE UTERUS.

INVERSION.

We extract the following from Dr. Graily Hewitt's work on '*Diseases of Women*,' p. 266. Inversion of the uterus generally occurs in connection with child-birth, but sometimes quite independently of pregnancy, being caused by the presence of a large polypus dragging down the fundus. The inversion may be partial or complete. If complete and recent, the diagnosis is not usually difficult. A tumour is felt in the vagina, which varies in size according to the degree of the inversion, and the time since its occurrence. This tumour is smooth, hard, uniform, and without any opening on the surface, which is perfectly continuous with that of the vagina. At the point corresponding to the os uteri this pyriform tumour projects downwards into the vagina. If the patient have been recently delivered, if a tumour have occupied the vagina since delivery, and if it be known that no tumour existed previously, then the case will not be doubtful. There is no possibility in complete inversion of passing the finger above the pedicle of the tumour, nor can the uterine sound pass in this direction. The symptoms are variable, unless the inversion be acute, and sometimes do not attract attention until the disease has lasted some time. Inversion of the uterus has been frequently regarded and treated as polypus, and the differential diagnosis is sometimes obscure. In both cases the tumour is generally more or less pyriform, hard, resistant, and smooth, and in both it terminates above in a constricted portion; in both, hæmorrhage and leucorrhœa are present, with symptoms produced by pressure on the adjacent viscera, but in the case of inversion, neither the sound nor the finger can be passed upwards beyond the pedicle of the tumour, whereas in the case of a polypus projecting into the vagina, the uterine sound can be made to pass beyond the neck of the tumour, which is encircled by the os uteri, into the interior of the uterus. The introduction of the sound into the uterus is not, always, however, an easy matter, and the only positive means of ascertaining the true condition is by introducing a sound into the bladder and the finger into the rectum, when the absence of the body of the uterus will be perceptible. In cases of partial inversion the difficulty of diagnosis is even greater. Dr. M'Clintock points out this additional symptom. By making downward traction on the tumour the lip formed by the os disappears, while on ceasing the traction the lip is again evident. In many cases the closest examination will be necessary to solve the difficulty. Dr. M'Clintock

records a case of complete procidentia and inversion of the uterus, with a polypus attached to the fundus; extirpation of the uterus by the écraseur was performed after it had been ligatured three days, and the patient got rapidly well. In any case of chronic inversion calling for extirpation, Dr. M'Clintock states that he will, without hesitation, adopt a similar course. 'Diseases of Women,' p. 97.

Cases of acute inversion of the uterus are recorded by:—Mr. Thorne ('Lancet,' vol. i, 1863, p. 266); Mr. Hooker, ('Med. Times and Gaz.,' vol. ii, 1863, p. 277), and Dr. Ramsbotham, (ibid. 432).

Retroflexion of the Uterus.

Dr. Freund, of Breslau, on 'Retroflexio Uteri and its Consequences.' In this affection, the connective tissue is considerably altered at those points where the flexion takes place; there are adhesions between the fundus of the uterus and the rectum, owing to peritonitis. The posterior wall of the flexed womb is filled with masses of connective tissue, the seat and extent of which determine the ease or difficulty of reposition. Hydronephrosis is a frequent concomitant affection, and is caused either by real stenosis of one or both ureters, or by flexion, owing to dislocation of the womb. After perimetritis, the ureter frequently adheres to the lateral wall of the uterus; and this explains the symptoms of hydronephrosis during life, viz., violent lumbar pains, shooting downwards along the ureters, neuralgia in the lower extremities, headache, disordered functions of the bladder, and dyspepsia, all which were formerly attributed to hysteria. The condition of the urine resembles that observed in catarrh of the bladder, and pyelitis might often be the consequence. Regarding the treatment, Dr. Freund recommends reposition by mechanical means, more especially by M. Valleix's sound, and medicated enemata ('Mon. f. Geb.,' supplement, vol. 1862).

DISEASES OF THE UTERUS.—TUBERCULOSIS.

Tuberculosis of the uterus is a very rare disease. Mr. Tomlinsou contributes a case, 'Trans. of Obst. Soc.,' vol. v., p. 174.

The patient, a single lady, æt. 55, had suffered from a profuse watery discharge of a dirty-brown colour, without smell, for more than two years. The uterus was found to be enlarged, but no conclusion could be formed as to the nature of the disease. She died fifteen months after being first seen. The uterus, Fallopian tubes, and ovaries were found enlarged and filled with tuberculous masses, on the removal of which the inner surface of the uterus presented a pitted or honeycomb appearance as far as the cervix, which was hypertrophied, but otherwise perfectly healthy. There were no tubercles in the lungs, nor in any other organ. Dr. Oldham remarks that in six cases of this disease which he had seen, the cavity was attacked in almost all, and generally was of small size.

POLYPUS OF THE UTERUS.

The following is an extract from the essay by Dr. M'Clintock, 'Clinical Diseases of Women,' p. 155. Polypus uteri is very rarely met with before the age of thirty. Of thirty-four cases noted by the author, the youngest was twenty-five, and the oldest sixty; married, widows, and virgins, were among the number, but of the last, comparatively few. The general *structure* of the polypi removed by the author was fibrous, or fibro-sarcomatous. The particular structure of which it is composed does not appear to influence the hæmorrhage or other symptoms of a polypus. Of the varieties, the fibrous or muscular generally arises from the fundus; the sarcomatous, from the upper part of the cervix, or lower part of the body, the gelatinous and vascular almost always spring from the lower part of the cervix. Besides the leading *symptom*,—irregular hæmorrhage,—sickness of stomach is not infrequent. The surface of a *benign* polypus varies in colour from a pale pink, to a deep red or purple, and is smooth to the touch. Uterine pain, and tenderness on digital examination are generally absent, but the former may exist when the tumour is intra-uterine, and the latter after it has been expelled. The diagnosis of an intra-uterine polypus is generally difficult; but it may be suspected if there be frequent metrorrhagia, independently of pregnancy or disease of the cervix, and with the enlargement of the uterus. If a tumour appear at the os-uteri, exploration with the finger or uterine sound may clear up the doubt; if these fail, the growth may be seized with a vulsellum, and if it have a pedicle, some movement of rotation can be effected. Of the fibrinous polypus first described by Kiwisch, and noticed by Scanzoni and West, the author has met with one well-marked case, in which a dense coagulum, forming an exact cast of the uterus, was expelled three weeks after delivery. He agrees with Scanzoni, that these formations are always to be regarded as sequelæ of abortion, and there can be little doubt that some of the moles described by Musitanus and others, were identical with the fibrinous polypus. Rokitansky suggests the possibility of these polypi occasionally originating in alterations of the retained membranes after abortion; and Prof. Braun, of Berlin, believes that a retained placenta is often the cause of polypoid bodies being formed within the uterus. See also a case of Dr. J. Ogle, 'Trans. of Path. Soc.' In the *treatment*, Dr. M'Clintock strongly insists on the removal of the polypus by torsion, or excision by the knife, scissors, or écraseur, in preference to the ligature, for while the principal danger from excision is the hæmorrhage, in the operation by the ligature it is the secondary or remote effects which are to be most dreaded.

Of 34 cases noted by the author, there were only 3 fatal cases, all of which occurred after operation by the ligature; and of 59 cases of ligature reported by Dr. R. Lee, 9 proved fatal, while, according to the same authority, out of 35 cases in which polypi were removed by excision or torsion, not one patient died. Scanzoni restricts the ligature to cases in which torsion is prevented by the thickness of the pedicle, and excision is impossible, from its being beyond

reach. The author believes the use of the ligature alone will ere long become nearly obsolete, and, from a review of the cases given in this report, as well as of those recorded by Dr. Hamilton, Dr. R. Lee, and others, thinks we are justified in drawing the following conclusions as to the bad consequences which may result from the use of the ligature:—

1. Death may occur before the ligature has cut through the neck of the polypus, even in cases where this has not been unusually delayed, and where no part of the uterus has been included in the ligature.
2. In some cases, death has been caused by the supervention of peritonitis.
3. In other cases uterine phlebitis, ending in death, has succeeded the application of the ligature.
4. In not a few instances the fatal issue has apparently been attributable to a kind of low toxæmic fever, or constitutional irritation.
5. Pelvic abscess, with its attendant dangers, is a result to be apprehended.
6. Phlegmasia dolens of one or both legs may follow the employment of the ligature.

Dr. Braxton Hicks records a case of intra-uterine polypus removed by his wire-rope *écraseur*, after the cervix had been dilated by means of the stem of the *Laminaria digitata*, or common sea tangle ('Med. Times and Gaz.' vol. i, 1863, p. 109); Dr. Cockle, a case of large pedunculated fibrous polypus (*ibid.*, vol. ii, p. 484).

Prof. Simon, of Rostock ('Mon. f. Geb.' Dec., 1862), proposes a new method of removing large fibrous polypi from the uterus, the base of which is so large that application of the ligature or *écraseur* is impossible. The essential point in the excision of such tumours is the diminution of their circumference, for by this only can the pedicle be reached. This method consists in making a series of transverse incisions in the capsule of the tumour, and then by traction elongation is effected, and the tumour so thinned that the pedicle can be reached without difficulty by the finger and instrument.

This elongation of the polypus at the expense of its thickness is dependent on that property of the fibres of fibrous polypi by which they are enabled to be drawn out and separated from each other in large bundles, as soon as the unyielding investment, the hypertrophied sub-mucous cellular tissue of the uterus, is divided to a sufficient extent. The operation is performed by seizing the point of the polypus with the vulsellum, drawing it down, and then making free and deep transverse incisions into the body of the tumour, with a long and sharp-pointed pair of Cooper's scissors, until the unyielding capsular parts beyond the first incision are divided, and a sufficient reduction of the size of the tumour is obtained. The hæmorrhage is slight, and soon ceases after the removal of the polypus. Three cases are related in which this operation was performed with success. Dr. Alfred Hegar, of Darmstadt, relates a case in which this operation was modified. The tumour was chiefly intra-uterine, extending one inch and a quarter beyond the cervix, with its whole circumference adherent to the uterine walls. The adhesions were divided by scissors as far as possible, the point of the scissors was then turned directly on the tumour itself, which was cut, first in front, and then on the side, in a circular direction, so as to form a spiral series of cuts. By

thus using traction on the tumour, it became elongated, so that the pedicle was reached and divided, and the tumour removed. Slight fever and peritonitis followed, but the patient recovered well ('Mon. f. Geb.' March, 1863).

DISEASES OF THE OVARIES.—OVARİOTOMY.

Dr. Clay, Manchester, gives the results of his experience ('Trans. Obst. Soc., Lond.,' vol. v., 58). Of 116 cases in which the peritoneal section was made, 108 were for the extirpation of diseased ovaries, 4 for cutting down upon the tumour to establish ulceration where its removal was known to be impracticable, 1 for the Cæsarean section, and 1 for the removal of both uterus and ovaries. Of the 108 cases of ovariectomy, 74 completely recovered, and 34 died. All the four ulcerative cases recovered; the case of Cæsarean section lived to the fifteenth day, and the case of entire removal of both uterus and ovaries recovered. Of the 74 recoveries, many subsequently had children, both male and female, and in only two cases did the disease return in the opposite ovary. Of these last, one died five years after the operation, the other recovered after the removal of a tumour weighing forty-eight pounds, married, had three children, and sixteen years after the first operation was operated on a second time, and recovered. Of the 34 deaths, 10 died from "shock," 10 from peritonitis—generally about the third day—12 from prostration on or about the sixth or ninth day, and 2 from hæmorrhage. Dr. Clay attributes much of his success to the temperature of the room being raised to about 75°. He would prefer to operate without chloroform, since of the first fourteen of his cases, performed before chloroform was discovered, nine recovered; he still prefers the large incision, and attributes the distressing vomiting to the use of chloroform. Critical days are the third, sixth, ninth, and twelfth. Purgatives are injurious, and enemata with ox-gall are recommended. The patient is never allowed to empty either bladder or rectum without the catheter or enema for the first five or six days after operation.

OVARİOTOMY.

"The results obtained by operators of late years have been very much more favorable than was the case a few years back, and it may be said that, with a few exceptions, the most eminent physicians and surgeons in this country now regard ovariectomy as a legitimate and necessary operation." Dr. Graily Hewitt, 'Diseases of Women,' p. 588.

The following table, with the exception of Mr. Bryant's cases, includes the results of operations performed, so far as the author can learn, up to September, 1863.

Name of operator.	Total number of completed operations.	Cures.	Deaths.
Mr. Baker Brown	58	32	26
Mr. Bryant	10	6	4
Dr. Clay (Manchester)	107	73	34
Mr. Jonathan Hutchinson	7	4	3
Mr. Lane	11	8	3
Dr. Tyler Smith	19	15	4
Mr. Spencer Wells	74	49	25

The average per-centage of cures will be found to be 66; the highest and lowest per-centage being 78 and 55 respectively, but if the results of operations performed within the last four years only had been given, it would be seen that the per-centage of cures would be even still higher. "If this result be compared with that of cases of ovarian dropsy left to themselves, it will be seen that of 100 patients affected with progressive ovarian disease, 90 may be expected to be dead within two years if nothing beyond palliative measures be adopted; while from 60 to 70, may, by experienced operators, be fairly expected to be saved from death by ovariectomy." Dr. Hewitt (*op. cit.*), p. 590. There is good reason to believe that the mortality after the operation will annually become less, and that operations in the last stage of the disease will be comparatively rare.

Mr. Hutchinson, in recording a successful case in a woman, aged sixty-five,—probably the oldest on whom the operation has been performed,—shows the value of turning the patient on the side opposite to that from which the tumour grows, as soon as the cyst is partially emptied. The advantages obtained by this are three. First. The greatly increased facility of dragging out the cyst. Secondly. The much diminished risk of any cyst-fluid or blood passing into the peritoneal sac. Thirdly. The completion of the operation much more quickly, and with a smaller incision. In cases of polycystic tumours, the side position is especially desirable, since these can be much more easily reached and punctured in succession, or, in some cases, in this position, the tumour might be cut into freely, without any attempt at emptying it being made by the trocar. '*Brit. Med. Journ.*' vol. i, 1863, p. 320.

Mr. Spencer Wells relates the case of a patient upon whom ovariectomy was twice performed. '*Med.-Chir. Trans.*,' vol. xlv. The propositions the author believes to be established by this case are: (1) That ovariectomy may be performed twice on the same patient without any unusual difficulty. (2) That it may be advisable to make the incision, with the second operation, at some distance from the cicatrix left after the first operation. (3) That whenever one ovary is removed, the opposite ovary should be carefully examined, and that in all penetrating wounds of the abdomen, the divided edges of the peritoneum should be brought accurately and closely together.

The author believed this case to be unprecedented, but he has lately learned that Dr. Atlee, of Philadelphia, has performed ovariectomy successfully upon a patient from whom Dr. Clay, of Manchester, had removed an ovarian tumour, sixteen years before.

Mr. Spencer Wells records 25 cases of ovariectomy—18 of these were performed at the Samaritan Hospital, 14 recovered, and 4 died; the remaining 7 occurred in private practice, 6 of these recovered, and 1 died. '*Med. Times and Gaz.*,' vol. i., pp. 267, 314, 587, and vol. ii, pp. 560, 585.

EXTIRPATION OF THE UTERUS AND BOTH OVARIES.

Dr. Clay, Manchester, relates a case of extirpation of the uterus and both ovaries ('Trans. of Obst. Soc., Lond.,' vol. v, p. 66).

He had also performed this operation in 1844, and but for an accident on the thirteenth day, the patient promised to recover. The present case was that of a single lady who suffered from a large fibroid tumour of the uterus very closely simulating an ovarian tumour. This had latterly so completely filled up the cavity of the pelvis, that the passage of the fæces and urine was rendered extremely difficult. The tumour was with great difficulty dislodged from the pelvis, and was partially covered with the broad ligaments, so that the ovaries, of which the right was diseased, lay close to it. A ligature was applied immediately above the plane of the os uteri, and the tumour removed with very trifling hæmorrhage; the integuments were brought together and secured by six interrupted sutures, padded, bandaged, and the patient removed to bed in about fifteen minutes from the commencement of the operation. The tumour weighed eleven pounds. Sickness was troublesome during the first twenty-four hours, and symptoms of peritonitis occurred during the next three days, but the patient made a good recovery and returned home quite well on the thirty-fifth day from the operation. Prof. Simpson, who saw the patient, and the tumour immediately after the operation, remarks that this case may prove a precedent for extirpation in some exceptional cases of large fibroids of the uterus. M. Kœberle, of Strasbourg, relates a similar case, '*Presse. Méd. Belge*,' November, 1863. Both ovaries and the uterus were removed just above the vaginal portion of the cervix, for a large fibroid tumour of the uterus, which weighed fifteen and a half pounds. In spite of a severe attack of bronchitis, the patient recovered well.

DYSMENORRHŒA.

Of the three forms, mechanical, congestive, and neuralgic, Dr. Greenhalgh ('Trans. of Obst. Soc.,' vol. v, p. 164,) believes the first to be by far the most frequent. Many cases which he formerly regarded and treated without success as examples of the two latter forms, have readily yielded to division of the os and cervix uteri, by the bilateral metrotome, which the author has invented.

Of 23 cases in which the author has operated with this instrument, 18 have benefited considerably; 20 were married, and 3 were single women. Of the married, 5 had children, but had been sterile for periods varying from four to eleven years; 3 have since become pregnant. All these patients had been treated without success for dysmenorrhœa; 7 were cases of congenital, and 16 of induced dysmenorrhœa; 11 have been wholly free from pain since the operation; 7 suffer so little as not to need treatment; the remaining 5 are unrelieved. In 4 of these last, chronic metritis still existed. The author has found the division of the os and cervix uteri especially serviceable in (1) dysmenorrhœa, congenital

and induced. (2) In sterility, where there has been more or less obliquity of the uterus with a small external os. (3) In endometritis, where accumulation of muco-pus takes place in the uterine cavity. (4) In fibroid diseases of the uterus accompanied with great pain. (5) In suspected and proved cases of intra-uterine polypus, and discharges of coagula.

PREGNANCY.

Dr. Curtis, after carefully examining the evidence, records a case of pregnancy in a girl under *ten* years of age, who was delivered of a full-grown male child, weighing eight pounds, when she was ten years, eight months, and seven days old. The reputed father of the child is said to be about fifteen years of age. The mother menstruated once or twice before conception, was tolerably healthy during gestation, and had rather a lingering but quite natural labour. 'Boston Med. and Surg. Journal,' Feb. 19, 1863. The earliest age at which pregnancy is known to have occurred in this country, is eleven years, recorded by Mr. Robertson, of Manchester. As an example of late pregnancy, Mr. H. Bloxam records a case of delivery in a primipara, aged fifty-two. 'Lancet,' vol. ii, 1863, p. 380.

DISEASES OF THE VAGINA.

Tumours springing from the walls of the vagina are rare.—Dr. M'Clintock, 'Diseases of Women,' p. 196. In structure they are either (*a*) fibrous, or (*b*) cystic. The former may be either pedunculated or non-pedunculated; are generally small, and arise in the sub-mucous cellular tissue, the muscular coat of the vagina, or in the cellular network external to it; the larger growths have usually a deeper origin. Kiwisch asserts that the majority of the rounded fibroids connected with the vagina are primarily developed in the uterus, but this is only true of some cases where fibrous tumours of the uterus co-exist with similar growths in the vagina. Dr. M'Clintock relates 3 interesting cases. In 2 of these, the tumours,—about the size of a hen's egg,—was first noticed near the end of pregnancy, both were pedunculated, and attached to the posterior wall of the vagina. The third case much resembled a procident uterus. In all 3 cases extirpation was performed with success. (*b*) Cystic tumours of the vagina are even more rare than the fibrous. They probably arise, in many cases, from obstructed mucous follicles as Huguier has shown. Some of these vaginal cysts contain a clear glazy fluid like mucus, and others a limpid straw-coloured serum. These vaginal tumours are generally unattended by any symptoms; in many cases they have not been discovered or suspected till after labour has set in. Huguier supposes that the changes and lesions of pregnancy and parturition most frequently produces them; since out of 13 cases, in 12 the disease had developed itself during gestation or after delivery. The radical cure of these tumours may be effected by simple puncture, excision with the scissors or knife, or by tapping and the subsequent application of nitrate of silver or iodine.

Dr. Saexinger relates 3 cases of cystic tumours of the vagina. 'Spitals-Zeitung,' Sept. 1863. All 3 cases are very similar, and in all the application of nitrate of silver rapidly effected a cure. Dr. Hardwicke records a case, 'Lancet,' vol. i, 1853, p. 326, where a non-pedunculated tumour larger than an orange was found in the recto-vaginal septum in a woman in labour, and pressing forwards into the vagina. It was pushed down, and rendered tense by the child's head at each pain. The cyst was punctured, and about a pint of serous fluid escaped. Dr. Barnes—A case, 'Med. Times and Gaz.,' vol. ii, 1862, p. 602.

DISEASES OF THE PUERPERAL STATE.

PUERPERAL CONVULSIONS.

Bossi ('Spitals Zeitung,' 1862), relates 14 cases of eclampsia, which occurred within thirty-one months, among 4500 patients at the Lying-in Hospital of Graz. Of the 14 cases, 13 were primiparæ. Of the mothers, 8 recovered, and 6 died. In all these last there was intense Bright's disease, with great hyperæmia of the meninges, or of the brain itself, and in 5 cases œdema of the lungs. Of the children, 2 were born dead, and 12 lived; 13 presented with the head, and 1 case—twin, with the breech. Of the 15 children, 10 were extracted by the forceps, and 1 by perforation with cephalotripsy. The treatment adopted was, venesection in two cases, without success; chloroform inhalation one case, without success; enemata of opium in 7 cases, 3 died, 4 recovered. Subcutaneous injection of morphia 4 cases; 2 died, 2 recovered. Applications of ice, and cold douche to the head, in 3 cases—all 3 recovered.

Dr. Ramsbotham, 'Clinical Midwifery' ('Med. Times and Gaz.,' vol. i, 1863, pp. 105, 235, 288), relates a series of cases of puerperal convulsions, which occurred in his practice during the years 1840—1844.

The number of cases was 19. Of these, 11 were primiparæ, 7 were multiparæ, and in 1 case, it is not mentioned whether the patient was a primipara. In 14 cases, the convulsions occurred either before or during labour; and in 5, after the child's birth. Of the former series, 8 were at the full period of pregnancy; and in 6, labour came on prematurely. Of the latter series, 5 were at the full period; and in one, labour was premature. Three were twin-cases; in one, both children presented with the feet, which were brought down artificially; in another, both were delivered by forceps. One child was delivered by turning, 5 by craniotomy, and 12 passed naturally.

Of the mothers, 15 recovered, and 4 died. Of the 4 fatal cases, one was a case of pure apoplexy. Of the 22 children, 6 were saved, and 16 born dead. The author remarks on the peculiar liability of primiparæ, especially if it be a twin gestation, to attacks of convulsions, and adds, that of 111 cases attended by himself, 79 were primiparæ. The opinion

held by Denman and Collins, that "abdominal" inflammation is a common sequela of puerperal convulsions, the author does not find confirmed by his own experience; but thinks this may be accounted for by its being the practice to bleed more freely now for these attacks than when Denman wrote. In the 19 cases above mentioned, free venesection was employed in every case. In reference to the condition of the urine—of which mention is made in only one case, where it is said to be albuminous, the author remarks that he has found this condition to exist in "about every five cases out of six in which he has been able to make the observation, gradually becoming less with the recovery of the patient, and almost entirely disappearing at the end of twelve or fourteen days." Some pathologists believe the presence of albumen under such circumstances to be an indication of granular disease of the kidneys, and to this latter condition ascribe the cause of the convulsions; on the other hand, M. Blôt and others, assert that "the excretion of albumen by the kidneys in small quantities, is not an unusual occurrence in pregnant women." The author suggests the following explanation:—"We know that fibrine is in excess in the blood of pregnant women, we have reason to believe that albumen is also in excess; and from the observations of M. Blôt, as a part of that excess is got rid of by the kidneys, we may easily imagine that if there be a much greater quantity formed than healthy blood ought to contain, the superfluous albumen may be the exciting cause of the convulsive seizure."

Dr. Donkin (*Ed. Med. Journ.*, May, 1863) relates a case of puerperal mania, in which the urine was albuminous, and submits the following proposition; "That the acute dangerous class of cases are examples of uræmic blood-poisoning, of which the mania, rapid pulse, and other constitutional symptoms are merely the phenomena; and that the effusion, therefore, ought to be termed uræmic or renal puerperal mania, in contradistinction to the other form of the disease."

PUERPERAL DISEASES.

Prof. Simpson relates four cases of exanthemata occurring in the puerperal state (*'Ed. Med. Journ.'*, June, 1863). Two were cases of scarlatina, both occurring on the second or third day after delivery, and both recovered; another was a case of measles ushered in by an intense rigor on the fourth day after a natural labour, and proving fatal in fifty-three hours. The fourth was a case of smallpox occurring seven days after delivery, and causing death on the sixteenth day. Professor Simpson remarks that when any of the exanthemata attack a pregnant woman they rarely prove fatal, whatever the date of pregnancy may be; or if they do not appear till ten or fourteen days after her delivery they are not specially dangerous; but within the first eight days they are always alarming, and very often fatal. The early diagnosis is often very difficult, the disease, in many cases, being only marked by rigors with great rapidity of the pulse. The author does not agree with Dr. Ramsbotham in supposing that the poison of the special epidemic fever

is retained in the system of a puerperal woman some time before it broke out.

A fatal case of puerperal purpura is added. As an exception to the above statement, Dr. M. T. Sadler ('Med. Times,' vol. i, p. 657) states, that of six cases of smallpox occurring within the first week after delivery, all were mild cases, and recovered; while in three cases, the same disease appeared during the third, fifth, and ninth months of pregnancy respectively, inducing in each case premature labour, and causing death a few hours after delivery.

We take the following from a memoir, by Dr. M'Clintock, "On Puerperal Pelvic Cellulitis," 'Diseases of Women,' pp. 1—35. Although tedious in its progress, and exhausting to the patient, the disease rarely ends fatally. Of 70 cases, seen by the author, 2 only died, death in each case resulting from dysentery caused by an abscess bursting into the colon. Of 61 cases, 28 were primiparæ, though these form only a third of all the patients delivered in the Rotundo. The author agrees with Dr. West that cellulitis is rarely the result of true puerperal fever, but thinks, with Dr. Bennet, that it often succeeds an attack of metritis or metro-peritonitis. In 34 out of 62 cases, previous to the occurrence of cellulitis, there had been well-marked symptoms of uterine or abdominal inflammation, more or less severe, within the first week of childbed. The disease may follow so insidiously after metritis that its existence may not even be suspected until the patient gets up and begins to walk about. Hence the rule insisted upon by the author, that in all cases of convalescence from uterine or peritoneal inflammation, *the iliac regions should be daily examined* as carefully as the pulse is noted. Pelvic cellulitis may affect almost any part of the cellular tissue adjacent to the uterus; and whether occurring primarily or secondarily, it seldom appears after the lying-in month.

The sex of the child, the age of the woman, and whether she suckles or not, are circumstances which do not seem to have any influence upon its production; but, upon this last point, the author's opinion is directly opposed to that of M. Grisolle and of Dr. Bennet. The latter states that "one of its most frequent causes is the sudden arrest of lactation, however it may originate." When the disease occurs in a primary form,—which is generally attributable to some imprudence or indiscretion of the patient,—its invasion is marked by a rigor, to which succeed local pain, pyrexia, and the rapid formation of a tumour. Cases which begin thus, seldom end in suppuration, if appropriate treatment be promptly adopted. More usually, however, there seems to be no acute stage, the disease coming on insidiously, or appearing as a sequela of metritis. The diagnosis is here sometimes less evident, and if the tumour be very large, and extend much above the crest of the ilium, a disregard to the history of the case may lead to its being mistaken for an ovarian tumour. Where *suppuration* occurs, the chronic stage is generally brief, and seldom well marked. A return of pain and great tenderness in the tumour, with heightened pulse, emaciation, hectic symptoms, and diarrhœa, mark this stage, which, if it con-

tinue long, will reduce the patient to a state of great marasmus, and from this, recovery would scarcely seem possible.

Among the more special symptoms—which of necessity vary with the seat of the tumour,—the author mentions as an unfavorable symptom, inability to extend the thigh of the affected side, and agrees with Churchill, that where this symptom is present, the cellular tissue covering the psoas or iliacus internus muscle, or the parts lying beneath Poupert's ligament are affected.

Suppuration being established, the matter may point in different situations. Of 70 cases seen by the author, 37 ended in suppuration, with discharge of pus; 24 of these burst or were opened externally; viz., 20 in the iliac region, 2 above the pubes, 1 in the inguinal region, and 1 beside the anus; 6 were discharged per vaginam, 5 by the anus, and 2 burst in the bladder. The author has never known a *puerperal* pelvic abscess burst into the peritoneum. "The most rapid and satisfactory cases were those in which the matter discharged itself, in the iliac or supra-pubic regions. Enormous purulent cysts were thus obliterated within ten days after the puncture; while in other cases, where the abscess was smaller, three or four days sufficed to bring about a similar result." On this point, however, the author's opinion is contrary to that held by other writers, especially M. Becquerel. In the only two fatal cases seen by the author, death occurred from dysentery following the bursting of the abscess *internally* into the bowel.

Thirteen cases are related, as illustrating the principal points of importance in the disease, and the author concludes the memoir with remarks on the treatment. *Absolute rest*, in the physiological sense of the word, is strongly insisted upon in all stages of the disease, "without which all other treatment will prove nugatory. These cases almost always issue in the recovery of the patient; but they extend over a long period,—from three to four months being their average duration. Until resolution has taken place, or until the tumour has become chronic, the patient should observe the recumbent position." In the *acute* and *subacute* stages the local abstraction of blood by leeches to the seat of pain, is strongly recommended, with warm fomentations, light diet, and opiates, if necessary; a warm hip bath in the evening, the greatest care being taken in moving the patient, and if she have been recently delivered, the vagina should be syringed twice a day with warm water.

In the *subacute* stage, small doses of the bichloride of mercury are sometimes useful, with the addition of the muriate of morphia, if there be any tendency to diarrhœa, but the author has seen little benefit derived from the use of the iodide or bromide of potassium. When all fever and pain have subsided, and the tumour only remains, the Ung. Plumbi Iodidi or the Ung. Hydrarg. may be used, but should be at once suspended if any pain be caused by their employment. The treatment must be perseveringly continued for some time, and great prudence must be used in allowing the patient to get up. "This should not be attempted till all signs of inflammatory action in the tumour have completely disappeared." In the *chronic* stage, quinine, iodide of iron, and cod-liver oil are the remedies most relied on by the author. A generous diet, with a moderate amount of stimulants, may be allowed; but

the effects of tonics and of full diet should be carefully watched, since there is danger of over-stimulation. Pure air, however, "is the best of tonics," and from this change, if it can be safely enjoyed, the patient will derive the greatest benefit.

The cases where the catamenia reappeared all ended in recovery, and had no relapse. It is almost needless to add, that sexual intercourse must be strictly prohibited as long as any vestige of the disease remains. If the disease should pass into the *suppurative* stage, the treatment must be directed with a view of hastening forward the abscess, supporting the woman's strength, and alleviating any prominent symptom that may be present. During this stage the patients often become much exhausted, especially from diarrhœa, and the difficulty in the treatment is to administer the necessary support without over-stimulating the patient, and so increasing the fever which is always present to a greater or less degree. The tenesmus, which is generally a distressing symptom if the abscess be pointing in the rectum, and after it has burst into the bowel, will be best relieved by enemata or suppositories of opium. The dysentery which supervenes in these cases will be the more profuse and unmanageable, the higher the point of communication between the abscess and the gut, and to check it the most careful treatment, dietetic and medicinal, will be required. On the propriety of opening the abscess, the author observes:—"Where the abscess points externally, an artificial opening is desirable, but this should not be made till the matter is near the surface. A free opening should be made with the lancet, and it is better to let the matter exude spontaneously, or, at least, to make only very gentle pressure." If, however, the abscess tend towards the vagina, be prominent and distinctly fluctuating, and causing much distress, the bistoury may be used, though the author believes it better to let it burst of itself when pointing in this situation, and this was the course almost invariably adopted in his cases.

M. Blôt, in a treatise on the "Slowness of the Pulse in the Puerperal State," arrives at the following conclusions. 'Archiv. Gén. de Méd.,' Sept. 1863.

(a) Healthy lying-in-women in general have a pulse which has become more or less slow. (b) Three series of observations, made in the Clinical Institution and in the Hôtel Dieu, prove that the frequency of this phenomenon necessarily alternates with the state of health of the patient. In the physiological condition, the slowness of the pulse seems to be a general fact connected with the emptying of the uterus. It only varies in degree. It is not connected with the disposition, peculiar to many women, of always having a slow pulse, for those women on whom the observations were made possessed the ordinary physiological frequency of the pulse except during the puerperal period. (c) The degree of slowness of the pulse varies greatly. In 3 cases it fell to 35 pulsations in the minute, most frequently it varies between 44 and 60. From 21 observations the author concludes that food exercises no influence upon it. (d) This condition is more frequently found with multiparæ than with primiparæ, which may be explained

by the greater frequency of puerperal attacks among the latter. (e) The duration alternates between a few hours, and 10 or 14 days; generally the longer it continues the stronger it becomes, presupposing that the patient continues well. (f) The course is almost always the same. It begins generally in the first 24 hours after birth, then becomes always more considerable, remains uniform for a time, and again gradually disappears. It often exists even very distinctly at the time when the milk-fever,—falsely so called,—is said to come on. (g) The duration of the labour seems to have no influence upon the development and the degree of this condition of the pulse; on the contrary, the slightest pathological condition prevents its occurrence and removes it. It is observed after miscarriages, premature labour, and labour at the full time; and after natural and artificial delivery. Even violent after-pains do not remove it, but the same is not applicable to any but slight hæmorrhages. (h) Position has a marked effect, and a very considerable change occurs when the patient removes from the recumbent into the erect position. (i) This slowness of the pulse indicates a very favorable prognosis. It is only found with women in perfect health. In a hospital its frequent occurrence indicates an excellent state of health, while its rare occurrence should cause us to fear the appearance of diseases and epidemics. (k) The cause of this slowness of the pulse does not lie in a nervous exhaustion:—the investigations on the pulse which the author made in conjunction with Marcy, much more clearly point to its connection with an increase of the arterial tension after birth.

REPORT
ON
TOXICOLOGY AND MATERIA MEDICA.

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DIALYSIS.

DR. HARVEY gives an account of some experiments made by him, with reference to the detection of poisons by dialysis ('Lancet,' 1863, vol. i, p. 6). The metallic poisons, mercury, antimony and arsenic, were of course easily found by this process, even in organic liquids. It was, however, found that in the case of organic poisons mixed with "colloid" substances, sufficient amorphous matter passed through the membrane to obscure, and in some instances to render nugatory, the application of the colour-tests. This was the case, for example, in an experiment in which some strychnia was mixed with three eggs, and the mass was then submitted to dialysis; but on concentrating the fluid, and then extracting the strychnia by ether, the colour-test was successfully employed. No reaction was obtained by this process from the stomach (with its contents) of a man poisoned by opium; but it is not stated whether the ordinary methods of analysis gave a better result.

Cossa ('Gaz. Med. Ital. Lombard.,' 1862; Canstatt, Band vii, p. 66) finds that the dialyser need not be kept in the external fluid more than a quarter of an hour, when arsenic is the poison sought for. Morphia and phosphorus are also capable of detection by this method.

MECHANICAL IRRITANTS.

Pereles ('Allg. Wien. Med. Zeit.,' No. 32, p. 254) relates the case of a woman, æt. 34, who on account of disordered digestion swallowed a quantity of coarsely powdered glass, in order to "scour out" her stomach. Intense pain in the stomach came on, with tenderness; the pulse became small, 100 in the minute, and there were thirst

and pallor of countenance. An emetic was given, and part of the glass was rejected. Afterwards stimulants and aqua lauro cerasi were employed; the next day the urgency of the symptoms had passed off, and she completely recovered.

SULPHURIC ACID.

A series of papers on poisoning by sulphuric acid, from observations made in the clinique of Prof. Frerichs in Berlin, published by Maukopf in the '*Wien. Med. Woch.*,' (1862, pp. 558, &c.; 1863, pp. 180, &c.), contains several observations of interest. Five cases are recorded. The first and second cases are those of female servants, each of whom swallowed a mouthful of the dilute acid (one part of "English" acid in six); both these cases terminated in recovery. The first patient stated originally that a man had poured a burning fluid into her mouth; the truth of this was doubted, because the poison had evidently been swallowed, and the next day the girl confessed that she had taken the acid of her own accord. The third case, also that of a female, who took a mouthful of (? dilute) acid, was fatal in eight weeks. The next case, that of a youth who took a mouthful of strong acid, was doing well when the report terminated. The last case is that of a woman who swallowed a quantity of dilute acid, and who died in twenty-eight hours.

The main symptoms were those ordinarily observed in similar cases, but some points were also noticed to which attention has not been previously directed. Besides the matters vomited and those regurgitated from the œsophagus, there was abundant discharge of fluid, containing at first blood and afterwards mucus, from the buccal cavity. This was probably in great measure secreted by the salivary glands, owing to the irritation of the nerves of the mucous membrane of the mouth, as in the experiments of Bernard and others. In the fourth case suppurative parotitis occurred on the left side at the end of the sixth week. The salivation had then long ceased; and the inflammation is ascribed to extension of the swelling of the mucous membrane (which still existed) into Steno's duct, consequent obstruction of its cavity, accumulation of the secretion, and irritation of the gland—the chain of circumstances being exactly similar to that which causes mammary abscess. Swelling of both parotids on the fourth day of a poisoning case had already been noticed by Sebergondi.

The difficulty of swallowing, slight at first, gradually increased, and was greatest at the time when the altered mucous membrane separated and exposed the superficial ulcerations beneath. It appeared to be caused partly by the swelling of the subjacent tissues, partly by spasmodic contraction of the muscular fibres of the throat. The pain was most severe behind the larynx, and it remained there longer than elsewhere. In the fatal cases this part was found to be most affected by the poison. When the œsophagus was completely obstructed, the gastric symptoms disappeared for a time, to return the first time anything was swallowed and reached the stomach. The local action of the poison usually ceased at the œsophagus. In one case slight blackish spots

were observed in the duodenum, and in another small cicatrices. The ileum and colon were found inflamed in Case 3; but this affection was quite recent, and probably was caused by the marasmus. The larynx was affected more or less in four cases; in the third case cicatrices were found in its posterior wall. (Edema glottidis was feared in two cases, and the instruments for tracheotomy were got ready. It was observed, however, that the dyspnoea became much less when the patient was placed upright and made to cough, and examination with the finger showed that there was no great swelling; so that it was evident that the alarming symptoms were caused by the buccal fluids flowing backwards into the larynx. The trachea and bronchi were found partly covered by a croupy membrane in Case 5, and lobular pneumonia was also present, which may have been caused by portions of the membrane getting detached and being carried down into the larger tubes.

The blood examined in one of the cases during life was alkaline; two days after death in this instance it was found to be neutral, and as decomposition came on it became acid. A feebly acid reaction was observed in the muscles and also in the brain-substance in the fifth case.

An increased quantity of sulphuric acid was found in the urine in Cases 3, 4 and 5. It appeared to be in combination partly with lime, partly with alkalies. The excess would probably be greater than it is, if the destruction of the mucous membrane of the stomach did not retard the absorption of the acid into the blood. The greatest increase occurred within five hours after the poison was taken, and it had disappeared by the fifth day after that time. Albumen was found in the urine in the last three cases, in the others it was not looked for. In two cases transparent casts containing fine detritus-granules were also observed. Like the excess of acid, the albumen reached its maximum five hours after the ingestion of the poison, and it disappeared in two of the cases on the second day; in the other case on the third. Its presence is accounted for by ascribing it to a change in the diffusion-relations between the blood and the kidneys, caused by the presence of the sulphuric acid in the blood, and by its passing into the urine. In the third case the urine was found to be again albuminous on the ninth day and in the fourth case on the twentieth. Cylinders containing granules of urates, and on one day blood-discs, were also noticed; and after death the cortical substance of the kidney was found inflamed, with swelling of the interstitial tissue. The uriniferous tubules contained detritus; the epithelium was opaque from the presence of fine granules.

Another effect not hitherto described was intercostal neuralgia. In the second case it was observed in the position of the sixth to the tenth ribs on the right side on the third day; in the fourth case at the same spot in the fourth week. In the third case it was bilateral, afterwards affected the lumbar nerves also, was accompanied by hyperæsthesia, and was followed gradually by extreme sensitiveness of the whole body. Physical examination showed that there was no disease of the chest in these cases. The three points of greatest intensity, insisted on by Valleix, were well marked; and as the neuralgia occurred in each case at the

time when the ulceration of the œsophagus and stomach was most intense, and disappeared when that morbid process diminished, it is clear that it was due to reflected impressions, caused by irritation of the nerves of those parts.

Dr. Hegiubothom ('Med. Tim. and Gaz.,' vol. i, 1863, p. 183) relates a case of poisoning by six drachms of sulphuric acid, of sp. gr. 1·848, diluted with eighteen drachms of water, which was fatal in two and a half hours. The symptoms were those of collapse. There was neither vomiting nor purging. Stringy mucus and froth were discharged from the mouth, and dark-brown foam from the nostrils. The tongue and fauces were white, the œsophagus thrown into folds, brown, and having a tessellated or worm-eaten appearance; there was no breach of surface. The stomach contained a pint of black, acid, tenacious fluid, and was lined with a firmly adherent, black, gelatinous coat. The rapidity of the death was explicable partly by the drunken habits of the man, and partly by the fact that the stomach was empty when the poison was swallowed.

NITRIC ACID.

Wunderlich ('Arch. d. Heilk. Vierordt,' Heft ii, 1863, p. 183) records a case of poisoning by a teaspoonful of concentrated nitric acid. The usual effects occurred; but on the second day they were followed by dysenteric symptoms and by suppression of urine, which continued till death. This was preceded also by delirium and unconsciousness, and took place on the eighth day. The ordinary appearances produced by the acid were found in the throat, œsophagus and stomach. The mucous membrane of the small intestine was healthy; but the whole of the large intestine, from the cæcum to the anus, was inflamed, as in dysentery, and presented extensive false membranes and ulcers. Both kidneys were enlarged, their surface yellowish-white, adherent to the capsule, covered with ecchymoses; their cortical substance twice as thick as in the natural condition, bloodless, with a spotted yellow-white appearance. The epithelium of the uriniferous tubules was opaque and finely granular; no casts were seen in their interior. The bladder was empty.

PHOSPHORUS.

Numerous papers on poisoning by phosphorus are to be found in the foreign, and especially in the German, journals for the past year, which fully confirm the modern views of the similarity of the symptoms with those of acute atrophy of the liver, and of the rapidity with which fatty degeneration of almost all parts of the body occurs in these cases. M. Bucquoy ('Un. Méd.,' 1863, No. 81) relates a case of this kind, in which even the brain was found in a state of fatty degeneration. He also remarks that it contained an enormous quantity of phosphorus. M. Lancéreaux ('Un. Méd.,' No. 82) goes over the whole subject, and relates four cases which support the new views.

E. Wagener ('Wagner's Arch.,' 1862, iv; Canstatt, Band vii, p. 67) publishes a case of phosphorus poisoning in a girl aged thirteen. Fat was found in the parenchyma of the liver, in the renal epithelium, in

the tissue of the lungs, in the organic muscular fibres of the intestines, in the muscle of the heart, and in the abdominal muscles. The question whether many cases of supposed yellow atrophy of the liver are not really caused by phosphorus is especially discussed in this paper.

Karajan relates an instance which is a good illustration of the danger of overlooking this condition. A man, aged twenty-five, came and said that he had swallowed the substance scraped from the matches contained in three packets. He was in a café at the time, and went on drinking beer and wine. He said that the first effect produced was vomiting, which came on after six hours, and was repeated ten or twelve times. On his admission, twelve hours after taking the poison, all that he complained of was headache, anorexia, and thirst; dryness of the palate, with a metallic taste; and a slight burning sensation, not amounting to pain, and extending down the œsophagus into the stomach. The throat was somewhat red and the stomach rather tender; nothing else could be discovered to cause uneasiness; and, as the man was known to be a liar, the truth of his statement was considered extremely doubtful. One packet of matches, without heads, was found in his home. The stools and vomited fluids contained no phosphorus or phosphoric acid, but much phosphate of magnesia. In the fæces the phosphate of ammonia and magnesia was also found. Magnesia had been given freely as an antidote. No lead was detected, though this metal usually is present in the matches.

Serious symptoms, however, slowly manifested themselves. On the third day jaundice appeared, with tenderness of the hypochondrium and slight enlargement of the liver. On the seventh day this organ extended below the ribs by the breadth of a pleximeter, but on the evening of the same day it was found to have diminished in volume. There was also some blood in the fæces on the fourth day and later. On the sixth day the urine was thoroughly examined. Albumen was discovered in considerable quantity; biliphæin and uro-erythrin were also present, and the phosphates were in excess.

On the seventh day somnolence with incoherence of speech came on. The tongue was dry and black, the skin hot; at night he was obliged to be restrained, being delirious. The next morning he was unconscious, with a pulse of 132 in the minute; respirations slow. Tonic cramps then came on in the legs, and the ankles were extended. Later there were spasms of the arms also and trismus, and he died in convulsions at 4 p.m., 190 hours after taking the poison.

The usual appearances were found in this case. Extravasations of blood in the connective tissue of the neck and mediastinum; ecchymosis of the base of the heart. Liver small, withered; acini made up of fat-globules of different sizes; few of the hepatic cells still visible. Spleen unaltered in size, of rather an elongated form; some of its elements converted into aggregates of fatty globules, and fatty molecules found clinging to the trabeculæ. Alimentary canal containing a tarry fluid in its upper part. Numerous hæmorrhagic erosions in the pyloric extremity of the stomach. The cortical substance of the kidneys swollen; uriniferous tubules filled with fat-granules. According to Karajan, other substances, which have a chemical resemblance to phos-

phorus, produce similar changes in the liver. He refers to a case of supposed acute yellow atrophy of that organ, fatal in twenty-four hours after the patient's admission into the hospital. On post-mortem examination, a considerable quantity of arsenious acid was found in the stomach; but at the same time the liver presented the pathological appearances which had been expected. He also cites the fact that antimony is given to geese, in order to produce the fatty liver in them ('Woch. d. k. k. Ges. d. A. in Wien,' Nos. 20—27, 1863).

E. Fritz, L. Ranvier, and J. Verliac ('Arch. Gén. de Méd.,' 1863, vol. ii, p. 25), give two cases of a similar kind. One is that of a girl, æt. 25, who took the paste scraped from about sixty lucifer matches, containing phosphorus. Symptoms of irritant poisoning followed, with convulsive attacks, apparently of an hysterical kind. There was no jaundice. She died at the end of seventy-seven hours. At the autopsy the usual ecchymoses were found beneath the visceral pericardium, in the subpleural tissue, and in the mediastinum. The liver was of normal size, but its tissue was in an advanced state of fatty degeneration, no cells being visible in a thin section. The cortical tubes of the kidneys were filled with fat-granules; this was the case also to a less degree in the pyramids. The Malpighian tufts and capsules, on the other hand, were perfectly healthy.

The other case is that of a woman who died six days after eating a salad in which a large packet of matches had lain for an hour, having fallen in accidentally. In this case an icteric tint of the skin was observed. The cells at the periphery of the hepatic lobules were loaded with fat; those in their centres were healthy. The kidneys were less affected than in the first case; the heart, on the contrary, was more fatty. The muscular fibres of the tongue also contained fatty granules. The authors performed some experiments on cats and rabbits, giving them the paste from lucifer matches made into an emulsion with yolk of egg. In animals which died after forty to sixty hours the same changes were observed as have been described in man.

Dr. E. Maukopff ('Wien. Med. Woch.,' 1863, Nos. 26—32) gives a full account of three cases of phosphorus poisoning which occurred in the clinique of Prof. Frerichs. In one case the paste from the heads of 1000 matches (containing ten or twelve grains of phosphorus), in another three times that quantity, was swallowed. It is remarkable that one of these persons had swallowed the paste from 500 matches previously without any effects being produced, though in some instances thirty or forty have been known to kill.

The liver was very carefully examined in one of these cases. It was much enlarged, and its substance was made up of two portions, the one red, the other of a bright-yellow tint, which were sharply separated from each other. In the yellow parts the hepatic cells were enlarged and rounded, and contained numerous fine, fatty granules, but no globules of fat. The connective tissue between the acini was increased in thickness, and that between the cells was much more distinct than in the healthy organ. This was still more marked in the red portions, and the presence of numerous fatty granules showed that the tissue was beginning to undergo retrograde metamorphosis after its rapid growth. These

parts, in fact, presented in every respect a more advanced stage of the affection than the yellow. In them the fine fat-granules had coalesced into masses, and even into globules of fat, and the walls of the hepatic cells had disappeared. This change commenced in the periphery, and passed gradually towards the centre of the lobule; and the wasted condition which occurs in the later stages of the disease was shown by the surface of the liver being depressed opposite the parts which were red. The blood in this case was dark, and coagulated imperfectly after death. The corpuscles were normal in appearance. The urine, though slightly acid, deposited crystals of ammonio-phosphate of magnesia. Maukopff remarks that the hepatic affection produced by phosphorus ought not to be called a fatty disease, but an acute, diffused, parenchymatous inflammation. It exactly resembles the acute yellow atrophy; and since the enlarged spleen, the fatty heart, the ecchymoses in the areolar tissue of various parts, and the cerebral symptoms which precede death, occur in both conditions, he suggests that the disease of the liver only is produced by the poison, and that the affections of other parts are secondary. In one of his cases albumen was not present in the urine till two days after the jaundice and hepatic affection had been observed, and this fact supports Maukopff's opinion.

ALKALIES AND ALKALINE EARTHS.

Alkaline carbonates.—Mauricet ('Gaz. des Hôp.,' 1863, No. 3, p. 11) has made an experimental investigation into the action of alkalies upon animals, and has arrived at the following conclusions. The tolerance of alkalies depends on their elimination by the kidneys, the urine being rendered alkaline. The bicarbonate of soda is much more slowly excreted than the bicarbonate of potass, and therefore its administration cannot be borne for so long a time. It appears in the urine unchanged, whereas the potass salt was once found in a small quantity of urine converted into chloride of potassium. The ingestion of either of these salts always leads, in animals, to the presence of carbonate or bicarbonate of ammonia in the urine.

When carbonate of ammonia is given to animals, its elimination is very rapid. Great increase of the appetite is among the effects of its administration in large doses. It was not found to produce any excitement nor any nervous affection, nor disorder of the digestive tract. It was not detected in the urine, nor did the most delicate tests show its presence in the air expired.

The administration of alkalies did not appear to diminish the quantity of the solid constituents of the blood, nor the amount of urea in the urine; the animals became somewhat thin, but this was probably due to their taking less food in consequence of its being mixed with the salts.

Dr. Wilks and Dr. Taylor ('Guy's H. Rep.,' vol. ix, 1863, p. 173) relate a case in which a drachm and a half of nitrate of potass was administered daily in three doses during thirty-three days. The urine was increased in quantity under this treatment, sixty-four ounces being passed in one day. The amount of potass contained in it was more

than twice as great as in the healthy secretion. Crystals of nitre were obtained on evaporating the urine, and the presence of nitric acid was also proved by chemical tests.

Carbonate of soda.—Dr. Haines ('Pharm. Journ.,' vol. v, p. 26) gives the results of his investigations on the nature of a crystalline substance found near Aden, which contains 51 per cent. of neutral carbonate of soda. It is found along the coast for an extent of, perhaps, ten miles; and its quantity appears to be practically unlimited. It usually occurs in hollows beyond high-water mark, to which sea-water has had access by percolation. Hitherto it has only been used to increase the pungency of snuff. It is probably produced by the action of chloride of sodium on the carbonate of lime which forms the shingle at this spot, but the conditions of this decomposition are not yet known, and this appears to be the first observation of the natural production of alkali from sea-water without organic agency.

Bitartrate of potass.—M. Suter ('Journ. de Phar. et de Chim.,' p. 486) uses a dilute hydrochloric acid, consisting of equal parts of the ordinary acid and of water, for the purpose of dissolving out the bitartrate of potass from crude tartar. In this way the formation of chloride of potassium is avoided, which was observed by Liebig to take place when the strong acid was employed. The solution is made by the aid of heat; and as it cools, crystals of the bitartrate are deposited from it, which only require washing, to free them from any adhering hydrochloric acid. The mother-liquor is used several times in succession, till it becomes loaded with the salts of lime and iron.

Citrate of magnesia.—M. Martin ('Bull. de Thér.,' lxiv, 1863, p. 505) says that, in examining a specimen of English "citrate of magnesia," with the object of discovering the cause of its greater solubility and pleasantness, as compared with the French salt, he found it to consist of a mixture of bicarbonate of soda and citric acid.

M. Letter, of Brussels ('Journ. de Phar. et de Chim.,' p. 383) prepares the citrate of magnesia in the following manner. Twenty parts of citric acid are powdered, and are then mixed intimately with twelve parts of the carbonate of magnesia. The powder which results is left to itself; it gradually undergoes chemical change, and forms a spongy mass. At the end of about four or five days, if a little of it be thrown into water, it will be found not to effervesce. It is then dried at a temperature of 30° C.; it is reduced to powder, and must be kept in well-closed vessels. Rather a longer time may be required for the complete formation of the salt than that given above; the test of the combination being fully effected is the cessation of effervescence. Citrate of magnesia prepared in this way is perfectly soluble in water, and does not, like the ordinary salt, undergo in the course of time any change by which part of it is rendered insoluble.

Salts of baryta.—Onsum ('Virchow's Archiv,' xxviii, p. 233) made a series of experiments with the salts of baryta on animals. Hoppe Seydler had found that a dog died a fortnight after the administration of carbonate of baryta, with numerous hæmorrhagic spots in the lungs, the tissue of which was already breaking down. The object of the paper is to show that the poisonous action of these salts is exerted

primarily on the lungs, and that particles of an insoluble mineral compound become precipitated within the blood, and cause impaction of the branches of the pulmonary artery.

Carbonate of baryta was given to a rabbit in increasing doses. When the quantity amounted to three grains daily, symptoms first appeared. Five hours after the poison was swallowed the animal was found lying motionless, with the respiration much quickened. Sensation appeared to be diminished. The difficulty of respiration and the paralysis increased, and the temperature fell, till in six hours the animal died. Small coagula were found in the branches of the pulmonary artery, which under the microscope were seen to be crowded with inorganic particles. Portions of the lung-substance were firm, not crepitating, and redder than the normal tissue. Miliary ecchymoses were found on the surface of the lungs, and also in the stomach. Other experiments gave similar results. Baryta was detected chemically in the lungs in every instance, and in the liver once; never in the brain, spinal cord, kidneys, or muscles. Granules of sulphate of baryta appear to be deposited in the blood, in consequence of the reaction of the sulphates contained in that fluid with the soluble salt of baryta absorbed, but the presence of fibrin is necessary for these granules to become aggregated into masses. If carbonate of baryta be placed beneath the skin of a rabbit, so that the animal cannot get the poison into its mouth by licking, no effects are produced; and the substance is afterwards found encysted or enclosed in an abscess. But chloride of barium, being soluble, acts as a poison when applied endermically, and its effects are best studied in this way, for death is not then so rapid. It is admitted that when the baryta salt is given in a large single dose, these characteristic appearances are not to be discovered. Convulsions were never observed among the effects of salts of baryta, though it is not denied that they may occur when the dose given is very large. The symptoms always commence in the lungs, the respiration becomes quicker and less deep, and the inspiratory murmur is inaudible; the heart's action, however, becomes more frequent. Afterwards restlessness is noticed, with loss of power, which at last amounts to paralysis.

Exactly similar effects were produced by the administration of oxalate of ammonia to rabbits. The appearances found after death are also the same. Oxalic acid is detected in the lungs, and oxalate of lime crystals are contained in the coagula which occupy the interior of the pulmonary artery.

ARSENIC.

Keber ('Casper,' xxiii, p. 271; xxiv, p. 131) records ten cases of poisoning by arsenic, some of which present points of interest. The first is that of a man and his wife, to whom the poison was repeatedly administered in small doses, producing transitory irritant symptoms. After a time both began to suffer from anæsthesia of the hands and feet, so that pricking and pinching them produced no effect. They also complained that their limbs felt as if they did not belong to them. In addition, the man suffered from muscular weakness, finding it difficult to rise from his seat, and walking in a heavy, clumsy manner, as if his

feet were loaded with weights. The strength of his hands was also impaired. The muscular actions of the woman were less affected. Schaper has recorded similar symptoms among the effects of arsenic, and the probability that they arose from this cause in the present instance is, of course, increased by the resemblance which the two cases bore to each other. Another case, which ran an acute course, is remarkable, because the patient, a girl, complained of no pain, though she suffered from diarrhœa and vomiting. She was pregnant; and when the body was exhumed, the fœtus was found lying between the thighs, with part of the membranes within the vagina. There is every reason to believe that its expulsion took place after the corpse was placed in the coffin. No trace of arsenic could be detected in the embryo. The duration of the mother's illness was fifty hours. The question arose in a third case whether asiatic cholera was not in part the cause of death, there being at the time an epidemic of that disease.

Casper ('*Vjschrft.*,' xxiii, p. 193) gives the details of a case in which two persons were convicted of murder, on account of the death of a woman under suspicious circumstances, in which he shows that the death was probably due to natural causes. The most prominent symptoms were headache and drowsiness. Casper states that arsenic produces cerebral symptoms only when taken in a large dose, and immediately absorbed. In this case, however, only traces of arsenic were said to have been found in the viscera; and no serious vomiting or diarrhœa had been present, by which the poison could have been removed from the body.

Köffler ('*Allg. Wien. Med. Zeit.*,' p. 93, 1863) records the poisoning of 138 persons by arsenic, in consequence of a miller having washed his mill-stones with a solution of that substance in vinegar, and afterwards used them for grinding corn. One case only was fatal, that of a man, 65 years old. A pustular eruption was observed in many of the patients; it occurred over the whole body, but especially on the face and neck.

Zenger ('*Bull. de la Soc. Chim.*,' '*Union Méd.*,' No. 62, 1863) recommends, for the detection of arsenic in organic compounds, the process of distillation with pure hydrochloric acid. Sulphuretted hydrogen gas is then passed into the distillate, and the sulphuret of arsenic so obtained is converted into arseniate of soda by nitric acid and nitrate of soda. The novelty of the process appears to be in the mode of obtaining the ring of metallic arsenic from the arseniate. Ten times its weight of oxalate of soda is added to this salt, and a little brick-dust to colour it. The mixture is then introduced into a tube two to four millimètres in diameter, and above it is placed some pure oxalate of soda. To this white substance the heat is first applied. When it is fully decomposed the tube is sealed at the end previously open, and the red powder in the bottom of it is then heated. The arsenic which it contains is thus reduced under pressure, so that no loss of it can take place, and a well-defined ring of the metal is obtained.

Dr. Odling ('*Journ. of the Chem. Soc.*,' July, 1863, p. 247) remarks that in testing the purity of the copper gauze or foil used in Reinsch's process it is only necessary to act on four or five grains of copper, since

the quantity of it dissolved in the application of Reinsch's test is so small as to be scarcely appreciable. He recommends that the copper, cut into fine pieces, be placed in a small tube-retort, with an excess of hydrochloric acid, and so much ferric hydrate or chloride, as contains a proportion of iron double that of the copper used. Heat is then to be applied, when the whole of the copper is dissolved. On distilling to dryness, any arsenic present in the copper passes over as chloride. The distillate may be dissolved in a little dilute hydrochloric acid, and tested with sulphuretted hydrogen or pure copper gauze. The reason for using ferric chloride is that this agent does not give off any chlorine gas when heated with hydrochloric acid, as is the case when other oxygenants are used. If chlorine be generated, it passes over into the receivers, and prevents the immediate application of the tests to the distillate. Cupric oxide or chloride, on the other hand, is scarcely active enough for this purpose; and the solution of copper in hydrochloric acid, brought about by mere exposure to the air, is exceedingly tedious. It may be well to add that ferric chloride may itself be rendered quite free from arsenic by evaporating it once or twice to dryness with excess of hydrochloric acid.

Millon and Commaille ('Journ. de Pharm. et de Chim.,' Aug., 1863, p. 97) advise for the complete purification of copper from all traces of arsenic the following process, which is stated to be more effectual than even the deposition of copper by the galvanic current. The metal to be purified is dissolved by ebullition in commercial sulphuric acid, diluted with half its weight of water. All the arsenic present, whether derived from the acid or from the copper, is deposited in a black powder (known as the oxysulphuret of copper), on which boiling sulphuric acid has no action. Thus the sulphate of copper formed is quite free from arsenic. Its aqueous solution can be poured off from the black powder and crystallized. The salt still contains iron, and often zinc, but it may be completely separated from these metals by deposition by a galvanic battery.

Dr. J. Davy ('Ed. New Phil. Journ.,' vol. xviii, No. 1, p. 42) has visited the Whitbeck stream in Cumberland, and confirms the statements that its water contains arsenic in the proportion of '008 grain to the pint. The people did not appear to be in any way affected, either for good or evil, by the use of the water. It had been asserted that those who came to the place suffered at first from soreness of the throat, but of this he could find no evidence. No fish exist in the stream; and Dr. Davy mentions the instance of Ullswater, where the charr has completely disappeared, apparently in consequence of the water of a lead-mine, which he has found to contain arsenic, flowing into the lake. He also says that, as had been previously stated by Mr. Church, no ducks can be bred in the village. The vegetation on the banks of the stream appears to be quite unaffected. He did, indeed, notice a maple some of the branches of which were dead, but the cause of this was quite uncertain.

ANTIMONY.

M. Pécholier ('Rev. Méd.,' p. 500, 1863) relates to the Academy of Sciences some experiments made with the object of determining the

effects of tartar emetic on animals. It did not exert a uniform contra-stimulant influence. The depressing action on the circulation, respiration, and nervous system, though the most striking, is not the most constant of its effects. When given in a dose of .15 to 6 grains, it at first augments the rapidity of the pulse and respiration by a tenth, and produces a little nervous excitement. This state lasts fifteen or twenty minutes. It is not observed when the dose is very large (15—30 grains), and when no vomiting occurs. It is followed by a period of depression; the pulse becomes slower, and the respiration also; the temperature is lowered, especially on the surface; and there is a marked collapse of the nervous functions. This stage has a mean duration of three or four hours; it is never absent. Succeeding it a state of reaction is observed, in which the pulse and respiration again become somewhat more rapid than in health, and the temperature rises. This febrile condition appears to be caused by the organic lesions which are found after death, and it is generally fatal. If the dose be either very large or very small, it does not occur. The nervous symptoms observed in these experiments were connected chiefly with sensation; the motor power of the muscles and nerves, though diminished, was less affected. On post-mortem examination of the animals experimented on, irritation and injection of the stomach and intestines, and also of the liver, kidneys, brain, and muscles, were observed. The antimony was detected in the liver. The blood was always diffuent, especially when the poison had been given in large doses.

Comparing tartar emetic with ipecacuanha, Pécholier finds that the latter causes a more rapid depression, which very soon threatens life, but passes off quickly, and is not followed by the same dangerous reaction. The antimonial action, on the other hand, is slower, more profound, more lasting, and, when a certain limit has been passed, progresses almost certainly to death. It does not, like ipecacuanha, destroy the glycogenic function of the liver; on the other hand, ipecacuanha does not produce the diffuent condition of the blood, nor the congestion of the lungs, which are found after the administration of the antimonial salt.

IRON.

Mr. Gury ('Journ. of Pract. Med. and Surg.,' Jan., 1863, art. 6372) draws attention to the decomposition which occurs in mixtures containing syrup and an aqueous solution of sesquichloride of iron under the influence of light. The iron salt becomes reduced to a protochloride, and the cane sugar of the syrup is converted into grape sugar. Hence such combinations, which Mr. Gury thinks very valuable, cannot be kept, and must be freshly prepared. Under certain circumstances solutions of the sesquichloride of iron also have a peculiar action on gum. A cloudy appearance results on mixing them, and in a few hours one half the mixture is converted into a caseous paste. This effect is produced only when these substances are combined in certain proportions. If the quantity of the iron salt be either too great or too small, the mixture remains undecomposed.

M. Foucher ('Union Méd.,' No. 42, 1863) recommends the use of

manna in preparing pills of proto-iodide of iron. A mass so made always remains of a pasty consistence, and the iodide is found to retain its green colour, and not to undergo any chemical change.

M. Leroy ('Journ. de Phar. et de Chim.,' p. 275) has investigated the cause of the change in the hydrated sesquioxide of iron. This substance, when recently prepared, is light and flocculent, but, as is well known, after a time it becomes heavy, and it has then lost the power of combining with arsenious acid, so that it is useless as an antidote for that poison. This change was shown by Lefort to depend on an alteration in its chemical composition. Its formula becomes $2\text{Fe}_2\text{O}_3, 3\text{HO}$, instead of $\text{Fe}_2\text{O}_3, \text{HO}$. This alteration has been regarded by some as merely the effect of time, and by others it has been attributed to exposure to the air and to the action of light. According to Leroy, it is simply the effect of cold. He has a specimen which has been kept ten years without undergoing any change. It has been freely exposed to the sunshine; in the summer it has been allowed to have the temperature of the air, but in the winter it has been maintained uniformly above the temperature of 12°C . It still retains the power of combining with arsenious acid. About 15°C . is the best temperature to ensure the permanence of this preparation; below 12°C . it tends to undergo change.

M. Smedt ('Journ. de Phar. et de Chim.,' p. 485) prepares a substance which he believes to be a definite iodide of quinine and iron in the following manner. He adds tincture of iodine to a concentrated solution of the sulphuret of barium. The precipitate of sulphur is removed by filtration, and a concentrated and slightly acid solution of sulphate of quinine in alcohol is mixed with the liquid. Sulphate of baryta now goes down, and iodide of quinine remains dissolved in the spirit, forming a yellow liquid. A concentrated solution of iodide of iron is now prepared, the quantity of iodine being in the proportion of one part to two and a half of the sulphate of quinine originally used. This is added to the solution of iodide of quinine, and the mixed fluids are heated in a water bath. Finally, the liquid is filtered and crystallized. The salt forms long needles of a beautiful yellow colour. It is completely soluble in boiling water, and is not deposited as the liquid cools. It is also soluble in the cold in alcohol and ether. It has not yet been analysed. It has no smell, but possesses a bitter and ferruginous taste.

MANGANESE.

M. Josi ('Comptes Rendus de Ferrare,' 'Presse Méd. Belge,' No. 7, 1863, p. 38) speaks highly of the insoluble tannate of manganese, prepared by the decomposition of the sulphate of the protoxide of manganese by the alkaline tannate of potass, as an antiperiodic and febrifuge. It is not bitter, and therefore it is especially suited to delicate persons and children who cannot bear quinine. Its dose is two grammes (gr. xxxj) for an adult.

BISMUTH.

In order to detect the presence of arsenic in the nitrate of bismuth, Dr. Herapath ('Phar. Jour.,' 1863, p. 304) recommends the reduction of the salt by hydrogen. The vessel used for generating the gas is connected with a tube of suitable diameter, which is drawn out at certain points, so as to narrow its calibre. It is also carefully counterpoised, and heated at different parts by spirit lamps. When the purity of the hydrogen evolved has been ascertained, about twenty grains of the nitrate of bismuth are poured into the gas bottle. It is usually necessary to add a little more hydrochloric acid, after which the evolution of hydrogen goes on rapidly. In this way three or four films of metallic arsenic may often be obtained from this quantity of impure nitrate of bismuth. Dr. Herapath finds that arsenic is contained in almost all specimens of the commercial salt, and its proportion may amount to 1 part in 433. The question appears to have arisen in a recent case of arsenical poisoning in Wiltshire, whether the arsenic could have been derived from this source. At least an ounce of impure bismuth must, however, have been taken on this supposition, to account for the arsenic found in the viscera of the poisoned person; and all this bismuth must have been evacuated, for scarcely one twentieth of a grain of it was found. There is some reason to believe that the salts of bismuth also often contain thallium.

The best method of purifying the insoluble preparations of bismuth from arsenic is to boil them with caustic potash or soda. In this way the arsenious acid is dissolved out; and after repeating the process and washing with water, the residue is free from this impurity. It now consists, however, chiefly of oxide of bismuth, and it is necessary to dissolve it in nitric acid, and to reprecipitate it by the addition of water or of carbonate of soda, according as the nitrate or carbonate is desired.

The liquor bismuthi of Mr. Schacht, of Clifton, is a transparent solution, a drachm of which, containing a grain of the oxide of bismuth, is said to be as effectual in gastric diseases as fifteen grains of the insoluble nitrate ('Lancet,' 1863, vol. ii, p. 49).

COPPER.

Two cases of colic, caused apparently by poisoning with copper, and occurring in boys who worked with the metal, are recorded by the 'Bull. de Thér. (vol. lxx, p. 80). The pain was attended with slight constipation. It was much less severe than that of lead colic. The black line on the gums was distinct in each case, and in one the gums were also swollen and ulcerated at their edges. Both patients recovered in a few days. Milk was given to them, and this was the only treatment employed.

M. Llovet ('Un. Méd.,' 1863, No. 14, p. 219) prepares cylinders of sulphate of copper for use as a caustic, by mixing two parts of the powdered salt with one part of alum, fusing them gently over a spirit

lamp, and pouring them into a bronze mould. The object of adding the alum is to prevent the water of crystallization of the sulphate of copper being driven off by the heat. It is essential that the mould be made of bronze, lest the copper be deposited in the metallic state. The cylinders so obtained are transparent, and of a bluish-green colour.

MERCURY.

Mr. Lowndes ('Med. Times and Gaz.,' vol. ii, 1863, p. 195) relates a case of poisoning by turbith mineral (subsulphate of mercury). The patient, a healthy adult, appears to have taken rather less than a drachm of this substance. A burning sensation in the throat and vomiting soon followed, and afterwards purging and pain in the epigastrium, with cramps of the limbs. Ten hours after, the tongue was still of a greenish-yellow colour in the middle, evidently the result of local contact with the powder. Under the administration of opium, vomiting and purging ceased, but tenesmus remained for some time. The gums began to be sore thirty-six hours after the poison was taken, and slight salivation came on; but in three or four days the patient was able to return to his work.

Pédrolli ('Union Méd.,' No. xlii, 1863) recommends the following combination in obstinate syphilis:—Three grains of iodide of arsenic are dissolved in 1900 grains of water by the aid of a spirit lamp, and six grains of biniodide of mercury, with fifteen grains of iodide of potassium, are added to the solution. The dose is at first four drops daily, and is increased by two drops each day till eighty are given.

Mr. Haines ('Phar. Journ.,' p. 363), writing from Bombay, advises the disuse of the Hydrargyrum cum Cretâ, at least in India. At the ordinary temperature of that country the metallic mercury volatilizes; and at the same time some protoxide and peroxide are formed, so that the powder acquires a dirty salmon colour. In one specimen examined not a trace of metallic mercury was left, but there were 2.16 per cent. of the protoxide, and 29.48 per cent. of the peroxide.

THALLIUM.

Lamy ('Gaz. des Hôp.,' 1863, No. 104; 'Schmidt,' 1863, No. 11, p. 181) relates that, while experimenting on this new metal, he experienced pains accompanied by the greatest lassitude, especially in the lower extremities. In animals, even after small doses, he has noticed paralysis of the posterior limbs, feebleness, and violent pains, which appeared to have their seat in the intestines, and to be momentarily relieved by pressure and friction on the abdomen. Death occurred in sixty-four hours, or in a few days. Neither vomiting nor purging was noticed in the whole course of the affection, and no evidence of inflammation, or of other changes, was discovered on post-mortem examination of these animals. In a dog the bladder was distended; in some canaries the serous membranes, and especially that covering the liver, were granular, and had a whitish appearance. The thallium was detected by the spectroscope in the muscles, and still more in the intestines and in the white-looking serous membranes. It was not found in the teeth. It

is fortunate that we possess so delicate an indication of the presence of a poison the effects of which appear as yet to be obscure.

MINERAL WATERS.

M. Pétrequin ('Gaz. Hebd.,' 1863, p. 484) recommends the method of repeated congelation for the purpose of concentrating mineral waters. Ebullition in the open air has the disadvantage of destroying the organic substance (barègine, glairine), to which part of the efficacy of these remedies is ascribed; it also drives off the gases contained in them, and probably alters the composition of the salts; and even evaporation *in vacuo* expels the gases. Congelation is, therefore, to be preferred to either of these methods.

ORGANIC SUBSTANCES.

Fungi.

M. Humbert ('Journ. de Chim. Méd.,' vol. ix, p. 263) observed the effects produced by partaking of a fungus in a family of four persons. Two children vomited freely, and recovered. The father fell into a state of profound coma; tetanic symptoms and paralysis of deglutition were also observed; but recovery took place under the use of strong injections of coffee. The mother suffered from symptoms of cerebral excitement, among which was incessant loquacity. The coffee did her no good; but the application of leeches, on the following day, led to her restoration to health.

Dr. Mitchell ('Brit. Med. Journ.,' 1863, No. 130, p. 672) records two cases of poisoning by mushrooms. In the one the following effects were produced. A burning sensation, with constriction, extended down the pharynx; the abdomen was much distended; the stomach was irritable, but no actual vomiting occurred; there was slight purging; the sight was dim, and all the objects seen had a blue colour. In the other case drowsiness and giddiness were the only symptoms observed. Both patients recovered after the administration of an emetic, but nervous twitchings remained for some days. The *Amanita muscaria* and the *Boletus luridus* were found among some of the mushrooms which had not been eaten.

M. Lafargue ('Journ. de Chim. Méd.,' 1863, vol. ix, p. 74) relates three cases of poisoning by fungi, the *Agaricus bulbosus* being probably the species which produced the symptoms. About ten hours after eating them, one of the patients, a man aged thirty-eight years, was seized with pains in the epigastrium, extending over the abdomen. He also complained of nausea and vomiting, and he was purged. Collapse came on, and he died in thirty-eight hours after the first appearance of the effects of the poison. It was observed that, seventeen hours after death, decomposition had already set in, as shown by the fetid odour of the body. The case occurred, however, in the second week of September.

The wife of this man was attacked with similar symptoms, but recovered. Another man, who had eaten only one of the fungi, suffered from vomiting and diarrhoea for some days.

Melanthaceæ.

Dr. Edwards ('Med. Tim. and Gaz.,' 1863, p. 5) records a case of poisoning by the *veratrum viride*, in the person of a scientific chemist, who took, experimentally, a drachm of the tincture, a dose equivalent to twelve grains of the powder. A sense of uneasiness was soon experienced; and a little later, pain in the lower part of the abdomen, nausea, and alarming vomiting. After the contents of the stomach had been ejected, glairy mucus and blood were thrown up. Cold sweats also came on; the features became sunken, the skin cold, and the pulse could not be felt. An ounce and a half of pure brandy was given him, which checked the vomiting, and he rallied a little; the pulse was then feeble and irregular, forty-four in the minute. After an hour he fell asleep, and on waking, at the end of a quarter of a hour, appeared comparatively well. There was no diarrhœa at any time. All that the patient remembered afterwards of the most severe period of his symptoms was hearing and recognising the voice of one of his medical friends. Immense circles of a green colour appeared round the candle, which, as vertigo came on and he closed his eyes, turned to red. He had two or three times a slight return of the symptoms, and did not sleep during the night which followed.

M. Trapp, of St. Petersburg ('Bull. de Thér.,' vol. lxiv, p. 545) has noticed that on boiling for some time the colourless solution of veratria in concentrated hydrochloric acid, it gradually acquires an intense red colour, resembling that of the permanganate of potass.

Warneke ('Hosp. Tidende,' No. 6, 1863; 'Schmidt,' No. 10, p. 39) relates a case of poisoning by a wine-glass and a half of *vin. sem. colch.* occurring in a boy fourteen years of age, who swallowed it by mistake for Madeira, though it tasted disagreeably. During the whole day after taking the poison he remained well, but late in the afternoon he was found to have no appetite for dinner. Vomiting and purging of rice-water stools then set in, and pains in the limbs and thirst were also complained of. During the night he could not sleep, and suffered from headache and from vomiting of the water which was given to relieve his thirst. The medical man was not called in till the next morning. The child was then in a state of collapse, with clammy sweat on the surface of the body. The extremities cold, the lips and tongue bluish, the face pale and blue. The fingers spasmodically flexed, but in a state of constant movement. There was no tenderness of the abdomen; but a sense of uneasiness at the epigastrium was complained of. In the afternoon of the same day the vomiting ceased, but the cramps continued; and according to those who saw the child before death occurred, they assumed a tetanic form. Warneke gives an analysis of nine other fatal cases of the same kind, recorded by Roux and Casper; he also relates some which terminated favorably. He thinks that the effects of colchicum are divisible into two classes—the gastro-enteric and the spinal. The gastro-enteric symptoms include pain and burning in the throat and œsophagus, pain and tenderness of the abdomen, and rapid collapse. The spinal symptoms resemble those of cholera; they

are in fatal cases always accompanied by symptoms belonging to the first group. Important cerebral disturbance does not occur in cases of poisoning by this substance. The headache and delirium which are observed are subordinate effects.

Solanaceæ.

Dr. Hayden ('Dublin Quar. Journ.,' Aug., 1863) records a case of poisoning by the berries of the *Atropa belladonna*, in which the early symptoms of excitement, with unmeaning laughter and staggering gait, were well marked, so that the condition resembled alcoholic intoxication. An emetic of mustard was given, and afterwards coffee; but in spite of this treatment, coma came on. As this passed off there was a second period of excitement, the patient shouting, singing, laughing, and crying alternately, and trying to get out of bed. The case terminated in recovery; at the end of the third day the only effect which remained was slight dilatation of the pupils. Dr. Hayden has repeated the experiments of Mr. Wharton Jones, from which it was concluded that belladonna acts as a stimulant to the vaso-motor nerves, and thus leads to contraction of the walls of the vessels. He finds, however, that this effect is not produced if the sentient nerves of the part to which the belladonna is applied be first divided. He therefore argues that the contraction of the vessels results from a reflex, and not from a direct action. So, also, the dilatation of the pupil would be caused by contraction of the dilator fibres of the iris, through the sympathetic, the stimulus being carried to the centres by the fifth nerve.

M. Béhier relates a case of poisoning by thirteen milligrammes (nearly a fifth of a grain) of atropine in an old man aged 75 years. In three hours a state of "deep coma" had developed itself; the pupils, however, though insensible, were only moderately dilated, and the patient answered unintelligibly to questions asked in a loud voice. Ten drops of the laudanum "of Sydenham" were then given every ten minutes; fifty drops in all. The iris then began to contract slightly when exposed to the light, and the patient heard better, and even uttered a few intelligible words. Soon after all the opium was given an incessant movement came on in all the limbs, with hyperæsthesia. Twenty drops more of the laudanum were administered after this; the patient gradually recovered, and by the fifteenth hour was pretty well. ('Union Médicale,' 1863, No. lxxxv).

Two other cases of poisoning by belladonna, in which opium was used as a remedy, are to be found in the journals of 1863. Like the preceding case, they are not of a very conclusive kind. One is a case which occurred in Italy more than twenty years ago, and is believed to be the first in which opium was employed as an antidote. It is related in the 'Gaz. Hebdomadaire,' p. 235. A drachm of a solution of the extract of belladonna, the strength of which is not stated, was taken, and produced severe effects. The administration of a drachm of Tinct. Opii relieved all the urgency of the symptoms. Mr. McNamara ('Dub. Quar. Journ.,' 1863) records the other case, one of poisoning by the extract of belladonna, in a child two years old. Delirium and dilata-

tion of the pupils were the principal symptoms. Tincture of opium was given; at first five minims, and afterwards two minims every hour. The child fell asleep about ten hours after the treatment was commenced, and the case terminated favorably. The quantity of the poison taken could not be ascertained.

Dr. H. Ploss ('Ztschrft. f. Med. Chir. u. Geb.,' vol. ii, Heft 4, p. 177) relates an instance in which three grains of the sulphate of atropine, mixed with two drachms of lard, were applied to a recently blistered surface. The ointment was soon removed; but death nevertheless occurred in about two hours.

Loret ('Jour. de Brux.,' xxxiv, p. 162; 'Schmidt,' Jan., 1863, p. 24) recommends that, instead of employing extracts of belladonna and of similar plants, the resinoid substances which they all contain should be separated and used. These spoil much less quickly than the ordinary extracts, and they are also much more uniform in the amount of alkaloid which they contain.

M. Procter ('Jour. de Phar. et de Chim.,' p. 384) obtains atropia in the following manner. A pound and a half of the root of the belladonna are placed with alcohol in a displacement-apparatus till seven pints of tincture have passed through. An ounce of slaked lime is then added to this fluid, and the mixture is allowed to stand twenty-four hours, care being taken to agitate frequently. It is then rendered slightly acid by a sufficient quantity of sulphuric acid; and after filtration it is evaporated down to a weight of two and a half ounces. A fatty substance separates, and forms a crystalline pellicle on the surface. Three ounces of water are then added to it. It is thrown on a filter, and the residue is washed, till the liquid weighs altogether eight ounces. An ounce of chloroform is then shaken up with it, which extracts the sulphate of atropine. Another ounce and a half of chloroform are added to this, with enough potash to make the liquid feebly alkaline. After shaking and allowing the chloroform to subside, it is separated, and the atropine crystallizes out by spontaneous evaporation. It must be redissolved in alcohol containing a little animal charcoal, and must then be recrystallized. By this process the amount of atropine obtained is about one third per cent. of the weight of the root of belladonna employed.

Dr. Shortt ('Madras Quart. Jour. of Med. Sci.,' April, 1863, p. 286) records three cases of poisoning by the fresh plant of the *Datura stramonium*, which occurred in India. Two of these cases terminated fatally, one of them in about three and a half hours. In this case at least three ounces of the leaves appear to have been swallowed.

Dr. McVeagh ('Dub. Quar. Jour.,' lxxi, p. 126) gives an account of the use of the *Datura tatula* in asthma. The bruised seeds and the dried herb are mixed in equal proportions and then smoked. It gives relief in cases where stramonium has failed; and it is more antispasmodic and less narcotic than that plant. It also rarely produces headache, or gives rise to dryness or constriction of the fauces. An extract (dose, gr. ss to gr. iss) and a tincture, made by digesting one part of the herb in eight parts of proof spirit (dose, ℥xx to ʒj) are also useful.

Tobacco.—Dr. E. Smith ('Lancet,' vol. i, 1863, p. 292) relates some experiments performed on two friends of his own, which show that smoking produces, after six minutes, an increase in the rapidity of the pulse, amounting at the twenty-first minute to thirty-seven and a half pulsations per minute. After prolonged smoking, the pulse was found to remain above the natural standard.

Convolvulaceæ.

Dr. Bernatzik publishes in the 'Med. Jahrbücher' (Wien, 1862, 1863) a complete description of the pharmaceutical characters of the different varieties of jalap. Since the breaking out of the American war, the supply of this drug has been less. Its quality also is inferior, and the root of the *Ipomœa Orizabensis*, the "light or fusiform" jalap of Guibourt, known in Germany as the "stipites Jalapæ," is more frequently substituted for it. Two varieties of the true jalap, the tuber of the *Exagonium purga*, are described—the one rounded, the other elongated in form. The structure of the last of these is very similar to that of the false jalap; its vascular bundles are, however, less developed. The starch-granules of the true and false jalap are different. Those of the root of the *Ipomœa Orizabensis* are small; they are also quite opaque; they are barrel-shaped, and grouped in pairs; or they are triangular or quadrangular, and arranged in masses of three or four; they have rarely a globular form. They are not laminated, and present but few fissures. On the other hand, the starch-grains of the true jalap are considerably larger; they are so transparent that they look like vesicles of water; they have one or two well-marked horseshoe shaped clefts, and they present concentric lamellæ. These differential characters enable the powders of the two drugs to be easily distinguished from each other. The resins may be distinguished by their different solubility in ether. In Vienna the one is frequently substituted for the other.

The latex (Milchsaft) or resiniferous juice occurs in all the tissues of both kinds of jalap. Its quantity is generally proportionate to that of the starch, while it is least abundant when the tuber contains much woody fibre and cellulose. An exception occurs in the case of the date- and pear-shaped pieces of the true jalap, which contain much starch and but little of the juice. These appear to be young tubers which were succulent and well nourished, and which have therefore become much wrinkled during the process of drying. The thinnish cylindrical pieces consist chiefly of bundles of woody fibres, with but little parenchyma, and that in a lignified state. They contain but little starch or latex, which is much more abundant in the well-developed, spindle-shaped, and knobbed pieces. Of the specimens of false jalap, the light, porous pieces contain less juice than the thicker, which, indeed, are equal in this respect to the true jalap. The starch-granules are in a formed condition in these drugs, with the exception only of those which occupy the centre of certain very compact pieces of both the kinds of jalap. Their position indicates that their formless state is not caused by the application of heat during the process of desiccation. The colour of the external surface of the drug depends upon the point to which this process has been carried, not on the amount of resin; but a yellow and gray tint of the cut sur-

face is an indication that the latex is abundant. Bernatzik thinks that the resin and starch are produced together from some third substance in plants in a state of vital activity, while in badly-nourished plants it is converted into woody fibre and cellulose. Hence, he believes that cultivation favours the formation of latex and starch; and he thinks that the larger part of the jalap of commerce comes from plants which have been cultivated for the purpose.

A series of experiments was made by him on his pupils, for the purpose of ascertaining what is the smallest dose of jalap which acts as a purgative. This effect was first produced by a dose of fourteen grains, and was never wanting when the quantity given exceeded a scruple. A mean dose of 17.8 grains produced, on the average, two evacuations. A mean dose of 2.6 grains of the resin produced the same effect. Bernatzik concludes that the root is more active than would be expected from the amount of resin which is present in it. He supposes that this arises from the root containing the resin in a more finely divided state, so that it is more easily acted on by the intestinal fluids. That the resin is the only purgative principle in the tuber is shown by the fact that seven drachms and a half of the powdered drug, from which the resin had been completely extracted by alcohol, produced no effect when swallowed in three doses at intervals of four hours, beyond some gastric uneasiness after the last dose.

Slight and transient nausea and colicky pain were produced in most of these experiments, besides the purgative effect. The smooth date- and pear-shaped tubers were found equally active with the rounded, knobby forms; but those pear-shaped ones which were shrivelled produced less effect, a mean dose of twenty-two and a half grains being required to purge. This variety of the drug often resembles withered pears so exactly, that one can believe the statements that this fruit has been used as a substitute for the tuber. The thin, stalk-like masses are remarkably deficient in purgative action, though the quantity of resin which they contain is large.

Of the two substances of which the resin is made up, the part insoluble in ether (convolvulin, rhodeoretin) is by far the more active. When pure, it is white, tasteless, and resembles gum-arabic in appearance. A dose of 2.2 grains is the smallest which acts as purgative. The other substance, pararhodeoretin, which is soluble in ether, is comparatively inert; and the effects which it does produce are shown by Bernatzik to depend on its containing some convolvulin. This pararhodeoretin forms the greater part of the resin of the stalk-like specimens of jalap, and this accounts for their slight purgative powers. It is considered to be the same substance as the rhodeoretin, but in an imperfect state.

Some experiments were also made to test the value of the false jalap, the resin of which is said by Spargatis to be identical with that of scammony. Twenty-two and a half grains of the powdered drug, and three grains of the nearly pure resin, were found to be the mean doses, which produced two evacuations.

The best Aleppo scammony to be obtained in Vienna was found to be comparatively inactive. Nearly half of it was left undissolved by

alcohol. Three and a half grains of its resin were required to produce the same effect as in the other experiments. It is therefore less active than the resin of the false jalap, while that, again, is inferior to the resin of the true jalap. The commercial Smyrna scammony produced no effect when given in doses of six to twenty grains. In conclusion, Bernatzik remarks that the statement that jalap-resin causes severe griping pains is incorrect. He did not find the resin of jalap a more certain purgative than the root, nor did it appear to have a more irritant action on the stomach and on the intestinal tract. The notion that the administration of jalap is not followed by constipation is without foundation. Many of the persons experimented on who took the jalap only twice complained afterwards of costiveness, which lasted even for weeks.

Gentianaceæ.

Ludwig and Kromeyer ('Phar. Jour.,' vol. v, p. 185) have succeeded in isolating the principle to which the gentiana lutea owes its bitter taste. They made an alcoholic extract of the fresh root. This was dissolved in water, and animal charcoal was added, which removed the bitter principle. The charcoal was then treated with alcohol; the tincture was evaporated; the residue was freed from precipitable matter by oxide of lead, which was itself thrown down by sulphuretted hydrogen. The solution was then evaporated to a syrup; and on agitation with ether, the bitter substance, to which the name of gentio-pierin is given, is deposited. It is a crystallizable, neutral substance, readily soluble in water and alcohol, but not in ether. Its formula is $C_{40}H_{30}O_{24}$.

Compositæ.

Artemisia absinthium.—Mr. W. Smith ('Proc. of Med. and Chir. Soc.,' vol. iv, No. 3) records a case of poisoning by about half an ounce of the oil of wormwood. The drug acted as a narcotico-acrid, causing insensibility with convulsions. The jaws were firmly fixed, and foaming at the mouth was among the symptoms observed. There was also a tendency to vomit. Emetics, as well as stimulants and demulcents, were employed in the treatment of the case. The man recovered; it is remarkable that afterwards he had no recollection of taking the poison, nor of the cause of his doing so.

Cinchonaceæ.

Mr. Howard ('Pharm. Jour.,' vol. v, p. 74) gives a very favorable report of some bark from the *Cinchona succirubra*, grown in India, which had been sent to him for examination. The amount of alkaloids which he obtained from bark of the second year's growth was 3.30 to 3.40 per cent. Of this quinine and cinchonidine made up 2.40 per cent. Cinchonine (which crystallized freely) formed 0.60 per cent., the remainder being chiefly water of the hydrated alkaloids. The product of fine quills of the South American red bark is 3.60 per cent. The

Indian bark was also found to contain kinovic acid, kinate of lime, gum, cinchona-red, &c. Bark of one year's growth yielded only 2.59 per cent. of alkaloids, which appeared to contain considerably less cinchonine than the older specimen. Mr. Howard thinks that it will be advisable to cut the bark as soon as the stem has attained a thickness which will repay the expense of cultivation. It would be disadvantageous to allow the bark to reach such an age as is indicated by many of the specimens from South America, for a process of deterioration, connected with the oxidation of the red colouring matter, appears to be continually going on.

Quinine was also obtained from the dried leaves, though only in very small quantity. A decoction or infusion of them may therefore be very useful in the cure of local fevers, though they cannot be used for the extraction of the alkaloid, in consequence of its implication with resinous matter. The leaves contain a considerable amount of kinovic acid. Mr. Howard believes that the alkaloids are produced by a reaction between the "mother substance" found in the heart-wood, and carried up into the leaves by the circulation of the sap, and the ammonia, which, according to De Vry, is present in every part of the plant. The cinchona-red appears to be formed at the same time, and the process, begun in the leaves, probably goes on afterwards in the bark.

M. Lautemann ('Gaz. Méd. Belge,' No. 44, 1863, p. 353) finds that quinic acid is converted into hippuric acid in the human organism. Having swallowed two drachms of quinate of lime overnight, he analysed the urine passed in the morning, and obtained from it nearly thirty-four grains of hippuric acid. Benzoic acid is probably an intermediate stage in the metamorphosis; this acid may be obtained experimentally by the action of hydriodic acid or of iodide of phosphorus upon quinic acid, and it is well known to be convertible within the human body into hippuric acid.

Dr. Kerner ('Schmidt,' 1863, No. 1, p. 22; 'Sep. Abdr. aus der Ztschr. f. Anal. Chim. v. Fresenius,' 1862) says that the ordinary process for testing sulphate of quinine for the other cinchona-alkaloids (by means of ether and ammonia) is not free from the liability to error. The ether sometimes assumes a gelatinous condition, and when it contains air may have an almost crystalline appearance, which may mislead the observer. Moreover, there are cinchona-alkaloids which, though isomeric and partly also isomorphous with quinidine, differ from it in other properties, and are far more soluble in ether. Kerner, therefore, proposes another test, founded on the fact that caustic solution of ammonia dissolves quinine very easily, while quinidine is much less soluble, and β and γ quinidine are scarcely, and cinchonine not at all, acted on by it. The test is applied to saturated solutions of the suspected sulphate of quinine in water. If a small amount only of the other alkaloids be present, the effect may be increased by treating a large quantity of the salt to be tested with a limited quantity of water, since the sulphates of cinchonine and quinidine dissolve more readily in water than the sulphate of quinine.

The 'Union Méd.' (No. 72, 1863) gives an account of three preparations of cinchona made by M. Ossian Henry. They are—(1) the standard wine of cinchona of constant composition; (2) the wine of

cinchona and iron, in which the addition of diastase prevents the precipitation of the iron salt by the tannic acid of the cinchona; and (3) a wine of cinchona and iodine, in which the iodine is first combined with sugar by a process of substitution, so that it does not decompose the wine of cinchona. It is stated that all these three preparations are free from the bitter taste of quinine.

Rubiaceæ.

M. Pécholier has made a series of experiments with ipecacuanha on animals; the results at which he has arrived are given in a pamphlet upon the subject, and also in the 'Gaz. Méd.,' 1862, i, p. 744, and in the 'Med.-Chir. Rev.,' Oct., 1863, p. 436. His object was not to study the vomiting produced by ipecacuanha, nor the changes in any particular organ or function to which it gives rise, but rather the action exerted upon the living organism as a whole. Introduced into the circulation, carried into intimate contact with the tissues, and bringing its influence to bear on all parts of the body, it produces complex effects, of which we may avail ourselves in therapeutics. Some have ascribed to ipecacuanha a tonic action; others have said that its effects are of a contra-stimulant and depressing character. It was especially to the solution of this question that the observations of Pécholier were directed. He employed in these experiments animals of two kinds—rabbits, because, as they cannot relieve themselves of the drug by vomiting, secondary effects are the more surely produced; and frogs, to trace the action of this substance upon the nervous system. Emetina in the soluble form, as chloride, was chiefly used in these researches; but ethereal, alcoholic, and watery extracts of ipecacuanha were also employed. The alcoholic and watery extracts have the same action as emetina; but the ethereal extract has none of its properties, though it resembles ipecacuanha in its offensive action on the smell and respiration. Children are often thrown into violent fits of anger by taking the ethereal extract; but it affects different people very differently.

Pécholier's conclusions as to the action of this remedy, derived from more than fifty experiments, are as follows:—(1) It produces a considerable decrease in the number and energy of the contractions of the heart. Under doses of emetina of one twentieth to half a grain, the pulsations of the rabbit's heart, previously 160—200, fell to 120—100, and even to 92. (2) Equally marked is the diminution of the frequency of the respirations; having been about 150 per minute, their number became 50, 40, or even 32. The lungs of those rabbits which died or were killed while under the influence of the drug were found to be remarkably pale, and to contain much less blood than those of healthy animals. (3) A fall in the temperature, amounting to 1—2.7° Cent., was observed in the mouth, ear, and axilla. In the rectum, on the other hand, the temperature was stationary, or rose by 0.5 or 0.7° Cent. (4) Constant efforts to vomit were made, evidenced by energetic contractions of the diaphragm and of the abdominal muscles. These efforts appeared to be the cause of a reaction, which was sometimes observed, but which did not last more than three or four minutes.

After death the stomach and the upper part of the small intestine were found injected. The remarkable fact that the glycose had disappeared from the liver was also observed. (5) The activity of the nervous system was decreased. There was collapse. The functions of the sensitive nerves were destroyed, while those of the motor nerves, and the contractility of the muscles, were impaired, but not completely annulled. These points were determined by the experiments on frogs. The animals were poisoned with emetine, and then decapitated. It was then found that pinching the skin produced no reflex contractions, while galvanic irritation of the lumbar nerves, and of the muscles themselves, gave rise to distinct movements, though these were far less considerable than those excited in a healthy frog after decapitation.

From these experiments, Pécholier concludes that ipecacuanha has a contra-stimulant action upon frogs and rabbits. It may be doubted whether it produces exactly similar effects in the human subject, and he admits that this is a matter of inference rather than of certainty. If the drug be employed in small doses, the reaction which follows the vomiting may produce secondary phenomena of excitement. But if doses of half a drachm to a drachm be given in four ounces of liquid, in the form of infusion, the effects are almost always depressing. This remedy is, therefore, recommended in the treatment of pneumonia. It has long been used in this disease at Montpellier; it is found to reduce the intensity of the lung disease, either by its depressing action, or by the copious diaphoresis which it produces, and which brings about a crisis in the malady. Toleration of the remedy, when given in these large doses, does not always occur. Sometimes each teaspoonful causes nausea, with incessant vomiting and great prostration; and these effects may even render it necessary to stop its administration. Pécholier infers, from the pale and bloodless condition of the lungs in the rabbits experimented on by him, that ipecacuanha exerts a specific action on the lungs; but, as is well remarked in the 'Med.-Chir. Review,' it must not be assumed that the same thing occurs in the human subject, in whom free vomiting takes place, which may render the condition of the pulmonary organs altogether different. Indeed, Magendie and Pelletier found an inflammatory state of the lungs in dogs to whom they gave this drug. The rabbits experimented on by Pécholier recovered from the depressing action of the ipecacuanha with extraordinary rapidity, when they did not die. Animals in a state of complete collapse, and with the heart's pulsations reduced to one half, returned to their normal condition in from half an hour to an hour. When death took place, it occurred in from eight to twenty-five minutes after the poison was given.

Rosaceæ.

Brayera anthelmintica.—M. Bedall ('Presse Méd. Belge,' 1863, No. 44, Oct. 18th) has succeeded in isolating the active principle of this plant, to which he gives the name of koussine. It is a white or yellowish crystalline powder, without odour, but possessed of a bitter, pungent taste. It appears to have acid properties. The formula assigned to

it is $C_{26}H_{22}O_5$. It is an energetic vermifuge, and expelled the tania when given in doses of a few centigrammes.

Leguminosæ.

During the past year the properties of the Calabar bean, the seed of the *Physostigma Venenosum*, have attracted much attention. The power which this agent possesses, of causing contraction of the pupil, was first noticed by Dr. Fraser, of Edinburgh; and a full account of the botanical characters of the plant from which it is obtained, and of the form, appearance, structure, and physiological properties of the seed, is given in an inaugural dissertation by Dr. Fraser, published in the 'Edinb. Med. Journ.' (July—September, 1863).

The *Physostigma Venenosum* is a climbing plant, which grows in the district of Calabar, on the west coast of Africa. The seed appears to be the only poisonous part of it; experiments made with the stem on animals have given only negative results. The bean is about an inch in length and three quarters of an inch in breadth, of an irregularly reniform shape, and of a shining brown colour. As it is brought to this country, it is generally covered with earthy matter, so that it has a greyish appearance. Its weight is about sixty-three grains.

The kernel is the most active part of the seed; it consists of the two concavo-convex cotyledons; it is of a creamy-white colour, and easily broken in a mortar or cut with a knife. When a small fatal dose of it is given to animals, the following effects are observed. A slight tremor is first seen, commencing posteriorly, and extending forwards to the anterior extremities and head. The animal then becomes paralysed, the hind limbs being first affected; and it soon lies extended, with all its muscles flaccid. A few unsuccessful attempts to recover its usual position are often made. In some cases the bowels are evacuated of their contents. The pupils then contract; the respiration becomes slow and irregular; a stertorous noise accompanies both the inspiration and the expiration, and frothy mucus escapes from the mouth. Slight muscular twitchings occur, especially in the extremities. No reflex movements are produced by either pinching or pricking the skin, and after a time the eyelids do not contract when touched, or even when the eyeball is pricked. When the animal is lifted by its ears the limbs hang inert, and the only sign of life is an occasional gasping inspiration. This soon ceases, and the animal appears dead. So long as the paralysis is incomplete, proofs of sensation may be obtained by pinching the ears or pricking the skin. It is certain that consciousness is preserved, at least as long as the power of expression remains.

Immediately after death the pupils dilate. On opening the body the muscles which are cut contract, and movements are easily excited by irritation of the nerves. The heart is found beating regularly, and the intestines exhibit distinct vermicular actions. The movements of the heart may continue for an hour and a half after death. The viscera are generally congested. There is nothing peculiar in the post-mortem appearances found.

When a much larger dose of the kernel is administered, paralysis

occurs almost instantly. The animal lies flaccid on the table, and exhibits muscular power only by a few twitches; after a few gasps the respirations cease. The contraction of the pupils during life, and their dilatation after death, are observed in these cases also. The heart is, under these circumstances, found distended and passive; contractions may, however, at first be produced by irritation of the organ. The vermicular action of the intestines is much diminished. No muscular contractions can be produced by pinching the motor nerves.

These effects are the same whatever be the channel by which this agent is introduced into the body. It has been injected into the blood, and it has been placed in contact with a wounded surface, or with the muscular and nervous tissues. It has also been placed in the stomach and rectum, in the serous cavities, and on the surface of the various mucous membranes. No effects were, however, produced in the rabbit by its application to a surface of skin denuded of the cuticle.

The spermoderm of the bean, which is remarkably hard and tough, is also poisonous. When placed in hot water, it becomes soft, but cold water has no action on it. When gr. i—iv of the alcoholic extract of this part of the seed, answering to from sixteen to sixty-four grains of its substance, are placed in the areolar tissue of a rabbit, effects are produced similar to those observed when the kernel is used. The contraction of the pupils is not, however, complete; the iris always remains sensitive to light. This part of the bean also produces diuresis and evacuations of watery fæces. The paralysis is strikingly shown by the inability of the limbs to support the body, and by the trembling movements of the head. These effects were recovered from in from two to three hours. In no instance did death follow the administration of the spermoderm. The alcoholic extract of the kernel was also found to exert a topical paralyzing influence, when applied to a dissected living muscle or to any part of the intestines. When the poison was injected into one of the cavities of the heart the action of the organ ceased, but applying the extract to the surface of the heart caused only a temporary suspension of its action. When placed in contact with one eye it caused contraction of the pupil, and the effect was limited to the eye to which it was applied.

Dr. Fraser shows that the effects of the Calabar bean are those which, according to Legallois and P. Wilson, are produced by agents which act primarily on the spinal cord. He ascribes the contraction of the pupil to paralysis of the nerves which pass from the medulla to the dilator fibres of the iris. The action of the bean appeared so exactly the opposite of that of strychnia, that it was thought desirable to test its powers as an antidote to that alkaloid. A poisonous dose of strychnia was, therefore, given to a full-grown rabbit; and when its action had been decidedly produced, a poisonous dose of the extract of the physostigma was injected into the flank. All convulsions in the hind limbs ceased at once, and they became flaccid; but rigidity and violent spasms occurred alternately in the anterior limbs and the fore part of the trunk. Shortly afterwards the animal died.

We have at present only an imperfect knowledge of the effects of this agent on man. It is estimated that 120 persons are killed annually by its

use, in trial by ordeal, at Calabar. Swallowing the bean in this way is said to be followed by violent thirst, paralysis of deglutition, and convulsive movements, affecting especially the muscles of the back. Death occurs at the end of about half an hour, without being preceded by loss of consciousness. The quantity of the bean administered as an ordeal is variable; sometimes the kernel is given entire, sometimes an infusion is prepared. In the cases in which recovery takes place nausea is quickly produced, and is followed by vomiting. The accused is then at once declared innocent.

No fatal case of poisoning by this drug has yet occurred in this country. Doses of five to twelve grains have been taken by Dr. Fraser, Dr. Christison, and others. In about five minutes a peculiar sensation comes on in the epigastrium, which gradually increases in intensity. Then repeated eructations occur; and a feeling of dyspnœa, dizziness, weakness of the extremities, twitches of the pectoral muscles, and dimness of vision, are among the other effects noticed. The heart may become irregular and tumultuous, and the number of its pulsations may notably decrease. These symptoms gradually pass off.

When the extract is placed in contact with the conjunctiva it immediately causes a copious secretion of tears, and in about five minutes a distinct contraction of the pupil occurs, which is limited to the side to which the drug is applied. In half an hour the pupil is a mere speck, but still retains a certain degree of mobility. Slight headache, with dimness of vision and myopia, generally occur; but these effects soon pass off. The contracted state of the pupil lasts for twelve or fourteen hours, and it may not completely disappear for five or six days. Applied to the skin, the extract causes local numbness.

Water and acetic acid do not appear to dissolve the active principle of the Calabar bean, but rectified spirit extracts it. Dr. Fraser uses a tincture made by treating an ounce of the finely powdered kernel with two ounces of spirit in a procolator. This quantity of spirit does not, however, exhaust the drug completely. Five minims of this tincture answer to about three grains of the kernel. The alcoholic extract of the bean, and a preparation in which this is suspended in water, are employed in ophthalmic medicine. Dr. Fraser has used the *physostigma* internally in cases of erysipelas, delirium tremens, febricula, acute bronchitis, and neuralgia. It is also useful as a local application to destroy pediculi.

Dr. Robertson ('Edin. Med. Journ.,' March, 1863, pp. 815, 1115) experimented on himself, with a view to ascertain the exact effects of this agent on the eyes. He recommends the use of syrup to suspend the spirituous extract, as the watery solution quickly spoils, and glycerine is apt to irritate the eyes. He employs a quantity of the extract which is equal to about half a grain of the bean, to produce contraction of the pupil. To neutralize the effects of a drop of a solution of atropine of the strength of gr. $\frac{1}{2}$ to 3j, he uses two drops of a stronger solution of the extract, corresponding to eight grains of the bean; even then the condition of the iris is only partially restored, though vision returns to its normal state.

He differs from Dr. Fraser in ascribing the contraction of the pupil

to an increased action of the sphincter pupillæ, and the myopia to contraction of the ciliaris muscle.

Mr. E. Hart ('Lancet,' vol. ii, 1863, p. 36) notices the employment, for ophthalmoscopic purposes, of paper saturated with the extract, the strength being so adjusted as exactly to neutralize the atropine paper of Mr. Streatfield. Cases of ophthalmic disease in which it has been employed are recorded by several observers. Mr. Nunneley ('Lancet,' vol. ii, p. 476) has administered it to dogs and cats; he remarks that, though it has no more taste than an ordinary haricot bean, animals, and especially cats, manifest a great repugnance to eating food with which it has been mixed.

† Cytisus Laburnum.—Mr. Popham ('Dub. Quar. Journ.,' lxi, p. 248) records the symptoms produced in several children by eating the seeds of this plant. They were of an acro-narcotic character, but were not severe, except in the case of one boy aged six years. In him the first effects produced were giddiness and pain in the head, with sensations of heat and constriction in the throat. After a time severe pain in the stomach came on, with collapse, and vomiting of a dark grumous matter; convulsive twitchings of the muscles of the face were also observed, and the pupils were dilated and sluggish. An emetic was administered; sinapisms were applied to the epigastrium and to the spine, and ammonia was given; narcotism, however, came on, attended with slowness of the respiration and stertor. When roused, he was testy and impatient, and soon relapsed into stupor. Under the external and internal administration of stimulants he ultimately recovered.

Terebinthaceæ.

An instance is related ('Gaz. Hebdomadaire,' 1863, p. 5. 'Journ. de Méd. de Toulouse') of the violent action of the *Rhus toxicodendron*. A gardener, who had merely been destroying some of the young shoots of the tree, was attacked with headache, erysipelatous swelling of the face and of the eyelids, and finally with an eruption of phlyctenæ over the whole body.

Aurantiaceæ.

Mr. C. Symes ('Pharm. Journ.,' vol. v, p. 162) says that lemon-juice, which has been exposed in the winter to a temperature of 150°, can be preserved for months without spoiling; lemon-juice so prepared during the summer months will not keep. It is necessary that the bottles be hermetically closed while the fluid is still hot; but common corks, covered with beeswax, suffice for this purpose.

Papaveraceæ.

Dr. Matthiessen and Mr. Foster ('Phil. Trans.,' 1863, p. 345) give an account of their investigations on narcotine and its derivatives. Wertheim, founding his opinion on the composition of the volatile bases, obtained by distilling narcotine with potash, had maintained that there are three varieties of this substance, which he named methyl-narcotine, ethyl-narcotine, and propyl-narcotine. Matthiessen and

Foster find no evidence of the existence of more than one form, which corresponds to the first of those described by Wertheim. Its composition is $C_{44}H_{23}NO_{14}$. It contains the elements of meconin, $C_{20}H_{10}O_8$, and of cotarnine, $C_{24}H_{13}NO_6$.

Prof. Albers, of Bonn (Virchow's 'Archiv,' xxvi, p. 225) has made a series of experiments upon the physiological action of the different principles contained in opium. In these observations doses of about a grain were introduced beneath the skin of the back or thigh in frogs. His conclusions are as follows:

1. Morphia, porphyroxin, codeia, narceine, and thebaina, produce violent and even tetanic spasms, and an exaltation of the sensibility. The convulsions caused by thebaina are especially violent and prolonged. The two frogs experimented on lay for twenty-four hours in a state of spasm. Neither morphia nor codeia has been observed to produce similar effects. Death also occurs later under the influence of thebaina than when the other substances are employed. This appears to depend upon the fact that this agent does not exalt the sensibility so much, so that exhaustion does not come on so soon.

Porphyroxin and papaverine produce especially hyperæsthesia, this being a more prominent effect of their action than spasm.

2. Meconin, narcotine, and meconic acid, on the other hand, produce less spasm and hyperæsthesia, but their administration is rapidly followed by insensibility. The effects of narcotine especially are the very opposite of those of thebaina. It quickly produces loss of sensibility, with paralysis and relaxation of the muscles. The only spasm caused by it is a strong, very limited tonic convulsion, appearing among the later symptoms. Meconic acid has a similar action; it causes transient spasm, affecting principally the thigh in which the poison was placed; it also produces, at first, a very slight hyperæsthesia. These phenomena quickly subside, and are followed by insensibility and paralysis. It is also much more slowly absorbed, and its effects are more quickly recovered from than any of the other constituents of opium. Twice as much of it is required to destroy life as of morphia.

The convulsions caused by morphia and thebaina are ascribed by Albers partly to the direct action of the poison on the muscles while circulating in the blood, partly to reflex action due to the hyperæsthesia. That they are in part produced in the first of these ways is shown by the fact that they do not altogether cease in limbs when the connections of their nerves with the spinal cord have been completely cut through. Albers thinks that there is yet another way in which convulsions are produced by these agents, namely, by the direct action of the poison upon the spinal and cerebral centres, exciting them to produce spasm of the muscles. He argues to this conclusion from the facts that all the limbs are often convulsed at the same instant, and that the pupils are contracted.

3. Opium, as well as the acid and bases derived from it, produce more rapid exhaustion of the susceptibility of the nerves to the influence of galvanism than any other poisons, coniine alone excepted. As soon as the spasmodic movements of the muscles cease, it is found to be impossible to excite them to contraction by any electrical irritation. This

is the reason, according to Albers, why, when coma and paralysis have once occurred in cases of poisoning by opium, recovery is so rare.

4. Opium acts much more quickly than morphia, and it also affects much more the cerebral functions. Albers also coincides with Oesterlen in thinking that morphia produces nausea, vomiting, diarrhœa, convulsions, and tonic spasms, far more frequently than opium. He has himself treated patients of an irritable nature, in whom the smallest dose of morphia has produced sickness. He says that it is much less certain than opium as a soporific agent. It is to the presence of narcotine and meconin in opium that these differences between the action of opium and that of morphia are principally due. The use of narcotine is especially indicated in cases of sleeplessness. According to Albers, the English "black drop" contains a preponderating quantity of this principle. He is inclined to attribute the fact observed by Magendie, that the residue of opium left after the extraction of the morphia possesses but very slight narcotic properties to some accidental peculiarity in the opium used. It does not appear that Magendie experimented with more than one kind of opium. In these experiments with the different opium principles, Albers observed nothing which confirmed the statement of Orfila, that opium and morphia exert their influence especially on the hinder limbs, as compared with codeia.

The uncertainty of the action of the different preparations and kinds of opium is generally attributed to peculiarities in the disease for which it is given, or in the patient to whom it is prescribed. Albers is inclined to ascribe it to the varying chemical constitution of the opium employed. Not only is this drug very liable to adulteration, but it is also frequently sold after its morphia has been extracted. He advises that experiments should be made on frogs with each specimen of opium before it is given to patients. Every effect which is produced by the bases or the acid contained in this drug will, he says, display itself in this way, and the proportion of the different principles may be estimated by the character of the actions produced. He thinks that it is indisputably proved that the operation of this drug on warm-blooded animals and on man is exactly the same as on frogs.

Mr. Winterbotham ('Lancet,' 1863, vol. i, p. 8) records the recovery of a child, aged two years and three months, from very severe symptoms caused by swallowing a grain of acetate of morphia. Free vomiting was induced by a zinc emetic, and coffee was given. Dr. M. Mackensie ('Med. Tim. and Gaz.,' vol. i, 1863, p. 278) relates a case in which a liniment containing two ounces of tincture of opium was injected into the rectum. A semi-comatose condition was produced, with extreme contraction of the pupils; but recovery took place without any artificial means being adopted to keep the brain in a state of activity. A fatal case of poisoning by three grains of morphia injected into the rectum is communicated by Dr. Anstie to the 'Med. Tim. and Gaz.' (1863, vol. i, p. 134). Ten hours after the administration of the drug the patient was found insensible, with the usual symptoms. Twenty grains of Morson's caffeine were given by mouth, with temporary advantage; the pulse, previously scarcely perceptible, rose to a fair strength, beating 100 in the minute; the limbs became warmer, and consciousness re-

turned. This good effect lasted only an hour and a half, and death occurred sixteen and a half hours after the injection of the poison.

Dr. Dupré ('Guy's Hosp. Rep.,' 1863, p. 323) recommends the following method of applying the iodic-acid test for morphia, by which its delicacy is greatly increased. After allowing the mixture containing the iodic acid and starch and the fluid supposed to contain morphia to stand for ten minutes, a very dilute solution of ammonia is carefully poured upon its surface by means of a pipette. Two coloured rings appear after a time at the place where the two fluids are in contact. The lower one is blue, the upper one brown. These rings may be clearly seen in liquids containing $\frac{1}{200000}$ th part of morphia. The brown ring alone shows itself in still more dilute solutions. Aniline is mentioned by Dr. Dupré as among the substances which give a somewhat similar reaction.

ORGANIC CHEMICAL PRODUCTS.

Carbolic acid.—Dr. Crace Calvert ('Lancet,' 1863, vol. ii, p. 362) describes the properties and medicinal uses of carbolic acid. A solution of this substance in glycerine is stated to be a valuable topical remedy in diphtheria; it acts as an escharotic, but its effects do not spread to the adjacent parts. A solution of one part of the acid in forty parts of water is applied to foul and offensive ulcers with good effect, as it removes all disagreeable smell. A stronger solution may be made by mixing two drachms of the acid with one drachm of liquor potassæ and half a pint of water. A case of wound of the fingers is recorded in this paper, in which carbolic acid appears to have been of service in checking sloughing. Dr. Calvert suggests its use in phthisis, the acid being both swallowed in solution, and also inhaled into the lungs, the breath being drawn through an apparatus containing cotton-wool saturated with it. According to Gratiolet and Lemaire, it has a powerful influence in arresting those fermentations which depend on the development of cryptogamic life, while it does not interfere with those which are of a purely chemical kind, such as the conversion of amygdaline into hydruret of benzoile.

Creasote.—According to the 'Presse Médicale Belge,' by the addition of ten parts of collodion to fifteen parts of creasote, a gelatinous mass is formed, which is easier of application to a carious tooth than the creasote alone, and has the further advantage of protecting the dental nerve from the air.

Aniline.—Dr. Letheby ('Pharm. Journ.,' vol. v, p. 130) gives an account of the physiological properties of nitro-benzole and aniline. He says that in every manufactory where these substances are prepared on a large scale their peculiar narcotic effects are often observed. The vapours mixed with the air are breathed by the workmen, and cause distressing headache and a heavy, sleepy sensation; but these effects are usually quickly removed by fresh air and stimulants. Two fatal cases of poisoning by nitro-benzole are, however, recorded. The one is that of a boy, aged seventeen years, who received a little of the liquid into his mouth while sucking at a siphon; the other occurred in a man, forty-

three years old, who spilt a quantity of it on his clothes, and went about for several hours, surrounded, of course, by an atmosphere saturated with the poison. In each case the only effect observed for some time was a sensation of drowsiness; gradually, however, the face became flushed, the expression stupid, and the gait unsteady. The mind remained perfectly clear, otherwise the symptoms resembled those of alcoholic intoxication. About four hours after the action of the nitro-benzole commenced, the drowsiness suddenly terminated in coma, as in a fit of apoplexy, and this occurred, in each case, about five hours before death. Nitro-benzole was detected by chemical examination in the brain and stomach.

These effects were so remarkable, that Dr. Letheby proceeded to make some experiments upon animals. He gave to dogs and cats from thirty to sixty drops of nitro-benzole, from which every trace of aniline had been removed by careful washing with dilute sulphuric acid and water. The effects produced were of two kinds. In one class of cases they resembled those observed in the human subject. The animal was seized with giddiness, and with weakness, at first of the hinder extremities, but afterwards of the fore legs and of the head and neck. The muscles were occasionally fixed in spasm, and there were periods of violent struggling, alternating with exhaustion and quiescence. The pupils were dilated, the action of the heart was tumultuous and irregular, and the breathing was somewhat difficult. Suddenly, and often at the close of a fit, the animal became comatose. The conjunctiva was then insensible, and the breathing slow and somewhat stertorous, and death occurred in a period which varied from twenty-five minutes to twelve hours after the poison was administered.

In another most extraordinary series of cases no effect beyond the discomfort from the taste of the substance was observed during some hours, or even days. The animal would take its food well, and went about as usual. Suddenly, at the expiration of an interval of nineteen to seventy-two hours, it began to look distressed; it had an attack of vomiting, and this was followed by an epileptic fit. After the convulsions had ceased, it was usually found that the hinder extremities were weak, or even paralysed. The further progress of the symptoms resembled that already described, except that it was much slower, consciousness being often retained for days after paralysis had occurred. They terminated in some cases in death, apparently from exhaustion, in other cases in recovery, with a gradual restoration of the muscular power. The time that elapsed before death, in three of these experiments, was from four to nine days.

Nitro-benzole appears to be converted into aniline in the interior of the body by a process of reduction. In the more rapid cases, where death took place within twenty-four hours, the odour of nitro-benzole was clearly perceptible in the stomach, brain, and lungs; but there was also unmistakable evidence of the existence of aniline in the organs of the body. In the slower cases the smell of the poison had disappeared; generally aniline was detected in the brain and in the urine, and sometimes in the stomach and liver; occasionally, however, no poison was found. It is possible that this conversion of nitro-benzole into aniline

may take place post mortem, for dead and decomposing animal matter is capable of effecting this chemical change. Its occurrence during life would be remarkable, because aniline itself undergoes oxidation upon the surface of the body, and mauve or Magenta-purple is produced. This has been observed in a case of poisoning by aniline, and also during the medicinal use of the sulphate of this substance in cases of chorea at the London Hospital. As much as 406 grains of this salt (which is not, like free aniline, poisonous) were given, in one case, in a few days. After a few doses the face became of a leaden-blue colour; the lips and gums looked as if the patient had been eating black currants, and the nails also acquired a purple hue. This tint was, however, so transitory, that it was observed to fade a little in the interval between each dose of the sulphate of aniline.

Dr. Letheby's colour-test for aniline has been already given in the 'Year-book' for 1862. It is, however, not mentioned there that the aniline is obtained from the animal tissues which contain it by distillation. Strychnia gives nearly the same colour reactions; but it is not volatile, and therefore will not distil over like aniline. It is also necessary to use strong sulphuric acid to produce the colour with strychnia, while aniline gives the best tints when the dilute acid is employed. There is, therefore, no difficulty in distinguishing between the two alkaloids.

Aniline colours.—Charvet ('Ann. d'Hyg.,' 1863, Oct., p. 381) gives an account of an epidemic which prevailed in a manufactory of fuchsine, or aniline red, at Pierre Bénite (Rhône). Among the earliest symptoms was an eruption, which occupied chiefly the hands and feet, and was remarkable for the multiplicity of its forms. Herpes, pemphigus, prurigo, and ecthyma, are described as associated together at the same spot. It disappeared very quickly as soon as the patient was removed. Slight thirst, and constipation or diarrhœa, were also observed in these cases, but the most striking phenomena were those which affected the nervous system. The following were especially noticed:—Weakness of the limbs, amounting, in many instances, to incomplete paralysis, and affecting the hands and feet before the arms or the legs; anæsthesia or hyperæsthesia, and various perversions of sense; formication; sensations of constriction round the limbs, or burning heat in them, or even acute pains. There were great varieties in these symptoms in different cases. The affection rarely lasted more than a month, and terminated in every case in recovery. Its cause was not surely ascertained, but it is ascribed to the use of arsenic acid in producing the colour from the aniline.

Glycerine.—M. Palm ('Bull. de Thér.,' lxx, 1863, p. 270) gives the following process for the detection of the presence of cane-sugar in glycerine. Two drops of sulphuric acid are added to the liquid, and it is then evaporated in a water bath. If it becomes black, it may be assumed that cane-sugar is present. Grape-sugar may be discovered by boiling the suspected glycerine with a third part of potass ley, when a brown colour appears if this impurity be contained in it.

Chloroformic anodyne.—Dr. Harley ('Lancet,' ii, p. 7) relates a case of poisoning by six drachms of this substance, occurring in a girl æt. 12.

Vomiting came on almost directly, but before ten minutes had elapsed the child was in a state of stupor, with contracted pupils. The stomach-pump was had recourse to, but the severity of the symptoms increased. The pulse became imperceptible, the respirations were only six in the minute, and the surface of the body began to feel cold. Artificial respiration was then employed, and a pint of hot coffee, with three drachms of Sp. *Æth. Nitr.*, were injected into the stomach. This caused slight improvement. A constant stream of cold water was then directed on to the head, with almost magical effect. The pulse became quicker and stronger, the respirations became natural, and the girl began to rub her face with her hand. Cessation of the affusion was followed by a return of the comatose condition. Even ten hours after the poison was taken there was a relapse, and the douche was again employed. The effects did not completely pass off for fifty-four hours. "Chloroformic anodyne" appears to contain a great deal of opium, some chloroform, and a small quantity of prussic acid.

Spiritus Ætheris Nitrici.—The 'Lancet' (1863, vol. ii, p. 573) gives a report of the state of this remedy as sold in London, especially with reference to the presence in it of methylated spirit. The best tests for this impurity appear to be the senses of taste and smell. A few drops of the diluted and undiluted spirit should be placed on the tongue and well tasted, when the tar-like, unpleasant, and even nauseous flavour of the methylated spirit will be detected, should it be present. The smell is best recognised by pouring a little of the suspected spirit upon a wine-glassful of hot water. "Ure's test," which consists in the employment of caustic potash, was found to be fallacious, owing to the presence of aldehyde, and Mr. Reynolds's test of chloride of mercury and caustic potass is also liable to mislead. A large proportion of the thirty-two samples examined had the smell and taste of methylated spirit, and two only of them reached the pharmacopœial standard of strength. Under the patent of M. Eschwege, it is now possible to purify wood-spirit itself, so that it is not distinguishable from ordinary alcohol by either smell or taste. The 'Pharm. Journ.' (Dec., 1863, p. 239) consoles itself with the remark that the impure specimens of Sp. *Æth. Nitr.* came from the shops of chemists in the low neighbourhoods at the east end of London. It is also observed that the specific gravity of this remedy is not a sufficient test as to the quantity of water contained in it, for the nitrous ether has itself a specific gravity of '947, and an increase in the proportion of that compound would, therefore, raise the density of the liquid.

Sp. Ammonia Aromaticus.—The Analytical Sanitary Commission has investigated the quality of the commercial specimens of this substance also ('Lancet,' ii, 1863, p. 660). The strength of it was found to be very variable, an ounce of the weakest preparation examined not containing more ammonia than a drachm of the strongest. The quantity of spirit was also very different in different specimens. The specific gravity varied between '834 and '933. Many of the samples contained methylated spirit. One specimen only was free from the presence of caustic ammonia. All the others contained it, with more or less of the carbonate; in many there were only traces of the carbonate to be

detected. The nature of the flavouring ingredients also varied; some contained rosemary, others nutmeg and cinnamon; in no instance was the odour of cloves perceived. Cloves are, however, said to cause the liquid to assume a dark colour when it is kept for any length of time.

ANIMAL POISONS AND REMEDIES.

Dr. Pavy ('Lancet,' 1863, vol. i, p. 461) found that only one specimen of pepsine, among many procured by him from London druggists, possessed any perceptible digestive property. The substance sold as pepsine usually contains much starch. In the experiments on this substance, sixty grains of the pepsine were added to forty minims of strong hydrochloric acid and two ounces of water. Frogs' legs were then placed in this fluid, and left at a uniform temperature of 110° Fahr. for four hours. The pepsine of Messrs. Bullock and Reynolds alone produced energetic effects, notwithstanding that only twenty grains of it were employed. This substance is, in fact, very easily rendered inert by slight decomposition, or by exposure to a temperature of 140° Fahr. The best method of preparing an artificial digestive fluid (useful for enemata in dysphagia and in other cases) is to strip off the fresh mucous membrane of the stomach of the pig, or of other animals, and, after drying it, to cut it into strips, and then to infuse it in water of the proper temperature when it is required to be used. About five to twenty grains should be employed in this way, and some acid should be added.

Mr. Tichborne ('Dublin Medical Press,' p. 54, 1863) suggests the following process for the detection of cantharidine in liquids. The suspected fluid is to be treated with chloroform, which dissolves out the cantharidine if it be present; the chloroform is then to be allowed to evaporate from a watch-glass, and the extractive left is to be mopped up with a little lint, moistened with olive oil. This is then to be applied to the skin, and covered with goldbeater's skin. A large vesicle on the arm was obtained in this way by the application of the extractive procured from half a pint of wine, to which some tincture, containing three grains of cantharides, had been added.

Dr. Newbigging ('Edinb. Med. Journ.,' October, 1863, p. 312) relates the symptoms of poisoning by the flesh of the American partridge, which were observed in two ladies, the cases occurring together in the year 1857. A short time after the dinner at which the partridge was eaten sensations of chilliness were complained of in each case. These were followed in one patient by vomiting, convulsions, and dimness of sight, amounting to almost complete blindness. The sight of the other lady was less affected. She suffered chiefly from muscular weakness and coldness of the surface, with difficulty of swallowing. Sickness was not among her symptoms, occurring only after an emetic had been given. The mind was quite clear in each case. These effects gradually passed off; four hours after the commencement of the symptoms, all the more urgent ones had subsided; the pulse rose, the skin became warm, and vision was restored. At one time it was believed that one of the cases, at least, would terminate fatally. For some days unpleasant effects remained; "a prickly feeling over the body, and involuntary startings and movements of the fingers," with great feebleness, were

complained of. After the use of emetics, the treatment consisted of stimulants; sinapisms were also applied. Dr. Newbigging thinks that the danger arises from the crop remaining in contact with the flesh of the bird, and therefore that this organ ought to be at once removed by those who are concerned in the exportation or sale of this article of food.

VENOMOUS REPTILES.

Dr. Emanuel ('*Med. Tim. and Gaz.*,' 1863, i, p. 449) gives an account of a case of snake-bite, which occurred in India. A quarter of an hour afterwards, a well-defined areola, of a dark-red colour, surrounded the spot bitten, which was just below the right nipple. The patient was very restless and anxious, and was bathed in clammy perspiration. The wound was scarified, and nitric acid was applied to it. Stimulants were given internally, but were at once vomited. A few minutes later, ptosis of both upper eyelids occurred, and paralysis of deglutition soon followed. The skin became still colder and more clammy, and after three quarters of an hour the respiration began to be difficult, infrequent, and shallow. The patient then became unconscious. The pulse only began to fail about ten minutes before death, which took place apparently about an hour and a half after the bite occurred.

In 1855 M. Soubeiran published the case of a gentleman, who, having been bitten by a viper in the year 1849, asserted that he still experienced attacks of rather severe pain in the arm bitten, with sensations of lassitude and malaise; these symptoms recurring every year in the month of April, and lasting a month.

Dr. Demeurat relates ('*Gaz. Hebd.*,' vol. x, p. 736) the following instance of a similar occurrence. A woman was bitten by a viper in the right forearm on the 28th May, 1824. She suffered at the time from nausea and vomiting, headache, and chilliness. The arm also became swollen, and a dark-red patch, covered by a large bleb, formed at the spot which was bitten. This affection extended across the forearm, and a large quantity of serosity exuded daily from the furrows between the bullæ. Beneath the raised epidermis was a thick false membrane. After eighteen months this membrane became black and dry, and the woman tore it off in one piece. The skin beneath was red, but soon recovered its healthy appearance. This was in November, 1826. The next year, on May 28th, the eruption returned, and continued till November. These phenomena repeat themselves each year, commencing about the same day. The lassitude, nausea, &c., appear, and last about a week, and then the eruption becomes developed; this, however, now only remains for about six weeks. In the intervals, all that is visible is a slight white cicatrix, which indicates the seat of the original bite. The earlier part of this extraordinary case is given on the authority of the patient alone, and Demeurat does not even say that he has seen the eruption during the present year. The woman is not subject to any other darts cutaneous affection.

LEECHES.

Dr. J. Beer ('*Deutsche Klinik*,' 1863, No. 17, p. 170) proposes the

following method by which the amount of blood extracted by leeches may be very greatly increased, and which he calls *bdellatomy*. It consists in making an incision into the caudal extremity of the animal, at the moment when it has sucked itself full. The blood gushes out at once like a fountain, but the animal continues to suck. Dr. Beer tried this plan first on a leech applied to his own finger. After an hour it was purposely taken off, though it was still drawing blood. The length of time during which a leech will continue to suck, which has been incised in this way, does not appear to have been ascertained. It may always be detached from the skin, when desired, by the application of a little common salt. It is not injured by the operation, it remains quite fresh and active, and regains almost its original size; a slight contraction only remains at the point where the incision was made. Goldammer, of Berlin, has manufactured instruments of two kinds for the special purpose of *bdellatomy*; a lancet appears, however, to be all that is required for the performance of this operation. The cut should be made at the side of the under surface of the leech. When it is made on the dorsum, the leech ceases to suck. It is necessary to avoid the ring next to the foot, because the anus is at this point, but on the dorsal surface. The twenty-fourth and twenty-ninth rings, counting from the anterior sucker, must also not be injured, as they contain the openings of the sexual passages in the median line of the abdominal surface. One of the advantages of *bdellatomy* is that the amount of blood extracted by leeches may be pretty accurately ascertained, by allowing the incised extremity of the animal to hang over into a graduated vessel, and by collecting the blood which escapes when the cut is made. No ill effects have been observed to follow the adoption of this plan. The danger of secondary hæmorrhage is not increased. The wound made by the leech heals in the ordinary manner. When rapid extraction of blood is required, Beer recommends that several leeches be applied at the same time, and that they be all incised. Leeches which have been used in cases of contagious disease should, of course, not be applied afterwards to persons whose malady is not of that character, lest the disease be propagated; but Rawitz has shown that the mortality in leeches, after their use, is much greater in typhus than in ordinary diseases, amounting to 70 per cent. in the former class of cases, and only to 37—40 per cent. in the latter.

M. Roucher ('Gaz. Hebdomadaire,' 1863, p. 359) remarks that, in disgorging leeches of their blood, too much force is often used. This causes lacerations of the animal's body, leading to gangrene of the anterior extremity, an affection which does not kill the leech, but which renders it useless, from the loss of the incisive apparatus. Considerable manual dexterity is, therefore, required in doing this. Kleist ('Schmidt's Jahrbücher,' 1863, No. 8) recommends putting the leech, as soon as it falls off, into a small flat saucer, containing dilute vinegar. The application of solutions of common salt to leeches is not judicious. It produces a prejudicial effect on them, so that they become affected by disease ('Knotenkrankheit'). The best plan that can be adopted is to dip the head of the leech only in dilute vinegar, and gently to remove the blood, by compressing the animal with one hand, about 3''' from

the tail. A quantity of blood collects at once in the posterior extremity of the animal. The blood in the fore part of the leech is then pressed out by the hand which is free, and that which had accumulated behind the part pressed on is afterwards gently pushed forwards and removed. The animal should be immediately placed in pure water. It has been proposed to add an alkali, with the object of diminishing the injurious effects of the vinegar, a fresh quantity of which must be used for the cleansing of each leech. Soft water appears to suit leeches better than hard. The tendency to decomposition from the organic matter contained in it may be obviated (as at Freistadt) by placing in it pieces of carbon. It is of great importance to avoid exposing leeches to considerable variations of temperature, when the water in which they are kept is changed. According to Roucher, the best thing to do with leeches, after they have been used, would be to place them in a non-metallic vessel, and to return them to the marsh. As this is out of the question, a vivarium is used. The animal should be kept in this for a week or ten days, as, at the end of that period, it most readily bites for a second time. The best apparatus for preserving leeches appears to consist of an earthen vessel covered with a lid made of zinc. This is itself placed in a pail of water, which is imbedded in the ground. Besides the water in the vessel in which the leeches are placed, a quantity of clayey earth is arranged round the bottom of it, and kept in its position by a shelving piece of wood, perforated by apertures, so that the leeches can readily pass from one element to the other. The water must be frequently changed. From this apparatus leeches may be applied four times in succession. The mortality among leeches after their employment is, according to Roucher, as follows:—"Virgin leeches," that is to say, those which have never before been used, all survive under proper care. Of those applied for the second time, 9 per cent. die; of those used for the third time, 18 per cent.; of those used for the fourth time, 27 per cent. After this the mortality reaches 72 per cent.; and he therefore recommends that leeches be returned to the marsh when they have been used four times. In their natural habitat they breed, and are, perhaps, brought back after a time as "virgin leeches." The quantity of blood absorbed by "virgin leeches," of the mean weight of 23 grains, was, on an average, 74—77 grains. That absorbed by leeches used for the second time was 50 grains; 43 grains of blood were extracted by leeches the third time they were applied to the skin, and 30 grains the fourth time. These numbers, however, require modification, as they do not include the amount of blood which escapes from the wound after the leech has fallen off. This quantity is, of course, the same, whatever kind of leech be used. Roucher gives the numbers 100, 86, 82, 75, as representing the relative value of leeches used for the first, second, third, and fourth times.

In 'Schmidt's Jahrbücher' (1863, No. 8) is given a report of the increasing success of the methods adopted in the Prussian military hospitals for the restoration of leeches. The proportion of these animals which were used a second time was, in 1860, 76 per cent.; in 1861 it was 83.7 per cent. The saving in expense amounted to about £180 in the first year, and £230 in the second year. The greatest success

was attained at the hospital at Freistadt, in which thirty-two leeches were employed 135 times.

NEW REMEDIES.

Prof. Bentley continues his descriptions of new remedies in the pages of the 'Pharmaceutical Journal.' The first mentioned is the *Sarracenia purpurea*, the drug which has been so highly vaunted for the cure of variola. The root and leaves are the parts employed in medicine. It is at present doubtful whether one of them is to be preferred to the other. The dose of the powdered leaves or root appears to be ʒj—iss. An infusion, decoction, or tincture of it may be employed. Mr. Marson ('Lancet,' 1863, ii, p. 6) says that he has used this remedy in fifteen cases of severe smallpox, all of which terminated fatally. The drug did not appear to have any effect whatever.

Dicentra (Corydalis) formosa.—The tuber of this plant is the part which is used medicinally. It contains corydalina, fumaric acid, and other ingredients. It is said to possess anti-syphilitic, resolvent, tonic, diuretic, alterative, antiscorbutic, and other properties. The resinous extract (corydalin), of which the dose is gr. ss—ijj, the tincture and the decoction are the preparations ordinarily employed.

Xanthoxylon fraxineum is a stimulant and alterative tonic, resembling mezereum in its properties, and useful especially in chronic rheumatism. The bark is the part used in medicine; its dose, in powder, is gr. x—xxx, three or four times a day. Besides the oleo-resinous extract (xanthoxylin), formulæ are given for an infusion, a decoction, and a tincture. Another bark, the exact source of which is unknown, is frequently mixed with it, or substituted for it.

Ptelea trifoliata, the root-bark of which is employed medicinally, is said to be a stimulant tonic, and is used in remittent and intermittent fevers.

Geranium maculatum.—Of this plant the rhizome is the part used. It has no odour, but a very astringent taste, and it contains a considerable quantity of tannic and gallic acids, and appears to be a useful astringent. It is especially serviceable in the maladies of infants, and of persons of delicate stomach, from its taste not being unpleasant. It is also useful as a gargle in affections of the throat. A substance called geranin is obtained from it, which also possesses astringent, styptic, and antiseptic properties. The dose of the rhizome is gr. xx—xl. A decoction, an infusion, and a tincture are also employed.

Cerasus Virginiana.—This plant, which is known also by the names of *Prunus serotina* and *Cerasus serotina*, appears to be extensively used in America as a tonic and sedative. The inner bark is the part employed, that of the root being considered the most active. It has a bitter, somewhat aromatic, and rather agreeable taste. When dried, it has scarcely any odour, though when fresh its smell recalls that of bitter almonds. A very poisonous volatile oil, containing prussic acid, has been obtained from it by distillation; and this is produced from amygdalin, as in the bitter almond. The bark also appears to contain a bitter principle, which was supposed at one time to be phlorydzin. The tincture, the syrup, and the cold infusion, are the preparations given by Prof. Bentley. The resinous extract, prunin, has the tonic pro-

perties of the bark, but is less sedative in its action. Its dose is gr. ij, or, as a sedative, gr. iv—viiij.

The following are among the new remedies a description of which is given in the 'Lancet' (1863, vol. i, pp. 127, 190, 337; vol. ii, p. 48). *Eupatorium purpureum*.—Eupurpurin, an oleo resin obtained from the alcoholic tincture of the root of this plant, is said to be superior to all other remedies as a diuretic; dose, gr. iij. *Baptisia tinctoria*, the wild indigo.—The root-bark, and the leaves, are the parts used. In full doses it is emetic and purgative, in smaller quantities it has a stimulant action. It is used internally in malignant fevers, and also topically as an application to sloughing ulcers, &c. Baptisin, the dose of which is gr. j—v. *Phytolacca decandra*.—The root and leaves of this plant are officinal. In large doses it is purgative, emetic, and narcotic; but it is used in small doses, when it is found to be a powerful alterative. It is said to relieve the pain in some cases of rheumatism more readily than even opium. The dose of the concentrated preparation (phytolaccin) is gr. $\frac{1}{8}$ — $\frac{1}{4}$. Rumacin.—The exact species from which this is obtained is not stated. It has an antiscorbutic, antiscrofulous, and alterative action; dose, gr. v. The remaining four remedies are said to have a special action on the uterus. They are the *Aletris farinosa*, the *Asclepias tuberosa*, the *Senecio gracilis*, and the *Trillium pendulum*.

GENERAL THERAPEUTICS.

M. Luton ('Presse Médicale Belge,' 1863, No. 45, p. 360), injects remedies into diseased parts which are deeply situated. He calls this proceeding the method of "parenchymatous substitution," the object being to replace one morbid action by another of an artificial kind. An exploratory trocar is used for this purpose, a glass syringe, containing the liquid to be injected, being fitted to it. In cases of sciatica and tic douloureux he employed a saturated solution of common salt in this way; alcohol, tincture of cantharides, or tincture of iodine, may also be injected, so as to excite slight inflammatory action. In chronic glandular enlargements this method is also useful. In one case of goitre, in which tincture of iodine was injected into the tumour, the patient completely recovered; two other cases of the same kind were under observation. No ill effects have been produced by this proceeding. Besides the substances mentioned, solutions of nitrate of silver, of sulphate of copper, or of bichloride of mercury, may also be employed.

Dr. Handfield Jones remarks, with reference to different anodynes, that aconitine is most adapted to relieve superficial pain, itching, and hyperæsthesia of the skin; opium is especially valuable when the pain is of a wearying, aching kind, more connected with debility, and requiring a stimulating and tonic rather than a sedative treatment; and veratria to intermediate states, "where a peculiar excitation of the nerve-terminities seems to alter the morbid action of the affected nerve." Aconite requires care, especially in weakly subjects, or in those who have a tendency to syncope. It should never be applied to excoriated or mucous surfaces, except when much diluted. There is a tolerance of it, not only in tetanus, but in cases of acute pain or of severe itching,

and in similar conditions. Dr. Jones employs a lotion containing one part of the tincture of aconite P. L., mixed with two of water ('*Med. Tim. and Gaz.*,' 1863, vol. i, p. 241).

After showing how unsatisfactory are the various theoretical views as to the action of expectorants, Dr. Gairdner ('*Glasgow Med. Jour.*,' xi, p. 129) attributes this defect to errors in the ordinary conception of the methods by which mucus is expelled from the bronchi. He thinks that, in health, this is effected by the muscular walls of the bronchial tubes contracting in a peristaltic way, so that they may be looked on as the "scavenger muscles of the respiratory tract." He divides expectorant remedies generally into two classes:—(1) Aromatic and volatile substances, such as camphor, ammonia, assafoetida, garlic, myrrh, copaiba, &c. Their action is probably local, and consequent on their direct contact with the pulmonary mucous membrane, either through the excretions or through the expired air. (2) Agents which are expectorant in small doses, nauseant and emetic when given in larger quantities. Such are antimony, ipecacuanha, squill, senega, lobelia, tobacco, &c.; and he believes that these remedies are peculiarly and specifically the excitors of bronchial peristalsis.

GENERAL PHARMACEUTICS.

M. Turun ('*Bull. de Thér.*,' vol. lxiv, p. 72, 1863) recommends the use of glycerine as a solvent for various remedies. Its miscibility with water gives it a great advantage, since it is easily cleansed away from sores, and it does not stain linen or apparatus, like other fatty bodies. He gives formulæ for preparations, which are called glycerolés, containing tincture of opium and other tinctures, extracts, volatile oils, salts of the organic alkaloids, and metallic salts, such as alum and borax. Still more useful are the solid preparations. The basis of these is the glycerolate of starch. This is made by suspending five parts of starch in ten parts of water, adding eighty-five parts of glycerine, and warming till the mixture assumes a gelatinous condition. The addition of water is with the object of facilitating the hydration of the starch, and preventing the compound having a disagreeable smell, which sometimes happens when the heat is maintained too long; a note of the editor says, however, that water is not necessary in preparing this compound. Various substances may be incorporated with the glycerolate of starch, such as sulphur, tannin, iodide of potassium, calomel, &c.

Dr. Attfield ('*Pharm. Journ.*,' p. 388) advises that, in making solutions of the alkaloids in oils, they should be first combined with oleic acid, the oleates so formed being far more soluble than the free alkaloids. Quinine combines at the temperature of boiling water with twice its weight of oleic acid, forming a fluid oleate, which can be mixed with cod-liver oil, or with other oils, when required.

M. Lepage ('*Journ. de Pharm. et de Chim.*,' p. 361) advocates the use of ether for the purpose of preserving the juices of plants, a plan originally suggested by Bourchardat. He has recently made some extract of belladonna from juice preserved by means of ether, for more than ten years. During this time a deposit of earthy salts from the juice occurs. Lepage gives no details as to the method of employing the ether.

REPORT
ON
FORENSIC MEDICINE.

BY
DR. C. HILTON FAGGE.

LITERATURE.

CASPER publishes, under the title of 'Klinische Novellen zur Gerichtlichen Medicin' (Berlin, Hirschwald, 1863), a volume which is full of practical observations on medico-legal questions. It contains 339 cases, which are all new. Among the questions discussed, is one which seems hitherto to have escaped notice, at least so far as systematic treatment of it is concerned—that of "priority of mode of death." It includes such points as the following:—Which of two wounds or bodily injuries was the actual cause of death? Did death arise from injury or disease, evidence of both being discovered at the autopsy? In the first class of cases, if two accused persons have been known to have had different weapons in their possession, the question which of two wounds, having different characters, was the cause of death, may be essential to the conviction of the murderer.

He also relates three cases, which bear on the question whether sodomy can be perpetrated by violence, during the resistance of the recipient. The most important of these was one of imputed crime, and Casper decided then that the performance of this act is not possible under such circumstances. He altogether denies that there is any peculiarity in the muscular development of the gluteal region in those who practise this act, and he has never seen the funnel-shaped condition of the anus on which Tardieu insists. But he attaches great importance to a peculiar conical sloping of the nates. The most valuable sign by far is the disappearance of the ordinary folds of the skin at the anus. He has never found any alteration in the form of the penis, as a consequence of this practice.

BLOOD-STAINS.

J. Van Deen ('Donders' und Berlin's Archiv,' Band iii, Heft 2; 'Canstatt,' Band vii, p. 62) has proposed a new and very delicate test for blood. The suspected stain is first treated with water, some

ozonized substance is then added to it, and afterwards Tinct. Guaiaci, when a distinct blue colour is developed. Oil of turpentine which has been kept for some time exposed to the air usually contains enough ozone to effect this reaction, if a few drops of it be mixed with the solution of blood. According to Schönbein, the iron contained in the blood is the element which is concerned in this effect. Van Deen, therefore, made a series of experiments with different salts of iron. He found that the acetate, citrate, and chloride of iron produce the blue colour in a marked degree, and other salts less distinctly. The sulphate and subacetate of copper also give the same reaction as blood, when examined in this way. But the different red salts of lead and antimony, as well as various red vegetable colouring matters, logwood, brazil-wood, and sandal-wood, gave uniformly negative results. The preparations of iron which give the blue colour are easily distinguished from blood by the caustic solution of ammonia, which forms a red precipitate in the iron solution, while it gives to blood a greenish-yellow tint. Old blood, kept in the fluid state, even though it be decomposed, reacts on this test more powerfully than blood recently drawn.

Dr. Liman ('Casper,' 1863, Band xxiv, p. 193) records a series of experiments made with the object of testing the value of this process. At first he used oil of turpentine, which was artificially ozonized, but he soon found that this was superfluous. In order to ascertain whether oil of turpentine contains ozone, it is only necessary to examine whether it has the power of bleaching a solution of indigo. The tincture of guaiacum used should be freshly prepared from resin taken out of the centre of a lump, as it undergoes changes when exposed to the action of air and light, which may interfere with the success of the test.

The most important of Liman's experiments are the following:—
 Exp. 8.—Blood two years old, dissolved in water, and diluted so that it formed one part in 3000, gave a distinct reaction. Exp. 12.—Recent blood, mixed with 6000 parts of water (in the proportion of one drop to eight ounces), assumed a clear blue colour. Exp. 13.—The same blood, added to water, so that it formed $\frac{1}{40,000}$ th part, gave no distinct coloration. Van Deen had been successful with blood even in this diluted condition. Exp. 14.—A few drops of rabbit's blood, poured into a glass, and diluted with water, so that the mixture was colourless, gave the reaction at once. Exp. 15—21.—Urine and bile gave no blue colour with this test, but they did not interfere with its development, when mixed with blood. Cherry juice gave negative results. Exp. 25—46 were made on blood-stains seated on various stuffs and tools. Blood on shirting, and on black and rose-coloured silk, on brown wool, and on wood, gave a deep-blue colour at once. Blood-stains fourteen days old were washed out with spring water; they were dried in the air, and were then soaked in water for twenty-four hours. There were then but slight traces of them visible; the fluid was feebly coloured. The test was perfectly successful. In another experiment, the stained linen was washed, and dried by exposure to heat. The linen then had a greenish colour, and looked as if covered by spots of pus or mucus; a distinct reaction was obtained. It is not necessary that the stains should be dissolved out for the application of this test. A piece of linen, on which there was a blood-stain some days

old, was moistened in a porcelain vessel with tincture of guaiacum. On the addition of oil of turpentine, the stain assumed an intense blue colour, without losing its form; even when the stains were covered with excrement, so that they were hidden, they came into view on the application of this test. Portions of linen dipped in blood, and then washed with hot water and soap, so as to be colourless, gave a sky-blue colour in the most striking manner.

The remaining experiments were for the purpose of testing the action of these reagents upon other substances. Exp. 47 showed that white tanned sheep's leather gives a distinct blue tint when placed in contact with oil of turpentine and tincture of guaiacum. A decoction of the leather gave the same reaction, but on steeping the leather in cold water no colour was obtained. The source of this effect could not be ascertained. Common filtering-paper slowly gave a very slight greenish-blue tint on the application of this test. Besides the iron salts mentioned by Van Deen, Liman found that the hydrated oxide of iron gives a feeble blue colour. He remarks that iron spots on clothing may be distinguished from blood-stains by their much sharper contours, and by their colour presenting only various shades of yellow, while blood-stains have an olive-green tint, especially when they have been washed. The solubility of iron-spots on linen in dilute hydrochloric acid also distinguishes them. It would be impossible to apply Van Deen's test to the diagnosis of blood-stains on iron weapons, as rust would give the same reaction.

Liman's conclusions are as follows:—(1) When a suspected stain yields a negative result with this test, it certainly does not consist of blood. (2) When a positive reaction is obtained, it cannot be at once concluded that the stain arises from blood; but in all probability it is so (α) when its general appearance is that of a stain of dried blood, or of one that has been washed; (β) when the substance on which the spot is found gives no reaction with this test by itself, or at least cold water in which the stuff has been steeped is not coloured by this process, while a solution of the stain in cold water shows the blue tint; (γ) when the spot is ascertained not to arise from any preparation of iron. It may be well to add that these investigations were made under the observation of Casper, and that he declares himself fully satisfied of the accuracy of the results arrived at.

Pfaff has made some observations on the determination of the age of blood-stains in criminal cases ('Casper,' xx, 2; 'Canstatt,' Band vii, p. 62). He finds that the solubility of blood-stains varies with the nature of the substance on which they are placed. He takes as the measure of solubility of a stain the time which is required for its edges to be no longer plainly distinguishable from the surrounding clean parts of the texture, when it is acted on by an arsenical solution in the proportion of gr. j to 5ij of distilled water. The change of colour of a blood-stain, from crimson to brown, occurs only by a series of gradations, in the course of several months; and solutions of blood of various ages differ, like the spots, in their tints. The bleaching action of chlorine may be used to ascertain the age of blood-stains, as it is exerted more slowly in proportion to the length of time they have existed.

Hoppe ('Virchow's Archiv,' xxiii, p. 446) appears to have been the

first to show that the solar spectrum, when transmitted through a layer of blood, or of a liquid containing blood, presents two defined dark lines. These bands are situated in the yellow and the green, between Fraunhofer's D and E. One of them is pretty near to the double line D; the other is not quite so close to E. Their breadth is rather less than that of the part of the spectrum between E and *b*. In order that they may be well defined, dilute solutions of blood must be employed. If the fluid be stronger, the bands increase in size, at the expense of the intervening space, and ultimately they coalesce. When the concentration of the fluid is still greater, the violet and blue parts of the spectrum disappear, and afterwards the green: so that at last only the red and the orange, and the space between E and *b*, remain visible.

Valentin, in his book on the spectroscope (Leipzig, 1863; 'v. 'Präg. Vjschrft.,' 1863, vol. ii, p. 111) gives the results of his investigations on the application of this instrument to the detection of blood-stains. Some further observations on the same subject are also contained in 'Virchow's Archiv' (xxvi, 1863, p. 580). Valentin states that one part of blood in 2000—3000 of water is easily discovered by this means, and that under favorable circumstances the test is successful with solutions containing only $\frac{1}{182,1250}$ of blood. The suspected stains should first be scraped, and treated with water at a temperature not higher than 40° C. If they are very old, three or four days are often required for water to extract from them all that it is capable of dissolving. A thick layer of the fluid should be subjected to this test, as the lines are darker in proportion to the length of the path of the ray through it.

Some kinds of bile also give lines in the green part of the spectrum; however, on dilution of the fluid with water, they disappear far more quickly than those which arise from the presence of blood. If the dark lines are not seen when a suspected fluid is examined, it must not be concluded that blood is not present, for old stains may be so altered by decomposition, by the action of heat, or by acids or caustic alkalies, that the lines do not show themselves. Stains of blood exposed to the action of sulphuretted hydrogen in a water-closet or elsewhere, would not be detected by the spectroscope in so dilute solutions as fresh spots.

The frequency with which the aniline colours are now used as dyes for clothing renders the comparison of their spectrum with that of blood of some interest, since they also give two dark lines when examined by the spectroscope. The position of the lines produced by blood and those due to the presence of fuchsin is, however, different. One of them does indeed occupy nearly the same part of the spectrum in the case of each fluid; but the fuchsin band begins slightly nearer to the red end of the spectrum, while the line produced by blood extends rather further towards the violet extremity. The positions of the other lines are quite different. That of fuchsin (the one of the fuchsin bands which is not constant) lies between *b* and F, while that of blood is situated near D.

Erdmann ('Ztschrft. f. anal. chim.,' 1862; 'Präg. Vjschrft.,' vol. ii, 1863, p. 110) relates a case in which the discovery of a spot on the ground, which after rain presented all the appearance of coagulated blood, gave rise to suspicions of violence; a human body being also found, and the cause of death being unknown. When part of this spot was treated

with water, a red solution was obtained. This gave the same reactions, with tannic acid and with the ferrocyanide of potassium, as solutions of dried blood. Under the microscope, bodies like blood-corpuscles were seen, but no blood-crystals could be obtained. Further investigation showed that the stain was not one of blood, and that the supposed blood-discs were the spores of an alga, which is therefore named the *Porphyridium cruentum*. This case shows the value, as Erdmann remarks, of the crystallization-test for blood.

SIGNS OF DEATH.

Dr. Taylor and Dr. Wilks ('Guy's H. Rep.,' 1863, p. 180) have made observations on the rate of cooling after death in 100 cases of various forms of accident and disease. The results which they obtained are thus represented in a tabular form :

	First period, two to three hours.	Second period, four to six hours.	Third period, six to eight hours.	Fourth period, twelve hours.
Number of observations	76	49	29	35
Maximum temperature of body	94°	86°	80°	79°
Minimum temperature of body	60°	62°	60°	56°
Average temperature of body	77°	74°	70°	69°

The temperature was estimated in each case by placing a thermometer-bulb upon the abdomen. The period from which the calculations start is not that which had elapsed after death, but that which had passed since the body was brought into the dead-house, which took place generally in from two to four hours, but in some cases not till ten or twelve hours after the time of death. Some curious anomalies were observed in these investigations. In the body of a man who died from Bright's disease, with erysipelas, the temperature was 72° two hours after death, and 74° four hours after death, though the temperature of the air at the time was 42°. The internal organs often retained a high temperature for a long time. In one case it was 76° more than eight hours after death, that of the air being 49°.

SUICIDE.

M. Legouest ('Gaz. des Hôp.,' No. 53, 1863) gives a good account of the different methods of committing suicide with firearms, which is the way usually adopted by military men. Some stand upright, and, throwing the head back, place the muzzle beneath their chin, pulling the trigger by means of their foot, if they use a gun. The ball in these cases usually passes through the face, causing frightful injury, but not entering the cranial cavity. Others lie down, placing the muzzle of the gun in the same way; they are more likely to succeed in their object, since they do not throw the head so much back. Others, again, apply the weapon to the outer side of the cranium. The bullet then usually enters the brain, but it may glance off the bone if the gun is held obliquely, and may pass

out through the chin, or lodge in the soft parts. When the muzzle is placed in the buccal cavity the course of the bullet is very variable; it may even remain in the mouth, and be spat out immediately afterwards. The explosion of the powder usually produces frightful effects in these cases.

BURNS.

Professor Maschka ('Präg. Vjschrft.,' 1863, vol. iii, p. 36) relates the following interesting case. In the body of a man who perished during a fire, in whom almost all the soft parts were carbonized, a crack was found in the left parietal bone, which was itself burned and superficially charred. No signs of reaction were discovered at the seat of the fracture; but this was accounted for on the supposition that the action of the flames had destroyed these appearances, and it was thought that the dead man must have received a blow on the head before the fire occurred. Maschka therefore made some experiments to decide this point. He found that the effects of fire on the cranial bones vary with the age of the body experimented on. In very young children cracks are produced in a very short time, sometimes in a few seconds. These generally radiate from the centre of ossification of the bone, and have often a remarkable resemblance to the fissures which are produced during life, especially when, as sometimes happens, they are seated, not exactly at the spot where the flame is applied, but in its neighbourhood. In the bones of older individuals very different effects are produced; after the flame has acted for some time, varying from two or three minutes to an hour and a half, according to the age and compactness of the bone, the external table separates and exposes the diploe; at the same time fissures make their appearance in the vitreous plate, which often breaks to pieces. The bones of young subjects also become brittle, so that pressure or a fall on the ground is sufficient to cause fractures of them; in older bones this does not occur. The origin of the injury to the bone in the case which gave rise to these investigations was therefore left undetermined.

Dr. Buzzard ('Lancet,' vol. i, 1863, p. 60) gives an account of the appearances found in the bodies of six children who were killed by fire. The examination was made sixty hours after death. The rigor mortis was well marked. The extremities were contracted, and the fingers were firmly clenched. The faces and necks, and in some of the children the hands, were blackened with smoke. The features showed no signs of suffering; one child was found on the floor, but the others were in their beds, so that there appears not to have been any very active struggle for life. One of the bodies only was opened; from the appearances found it was concluded that the cause of death was not suffocation, as was previously supposed. The lungs were, indeed, congested, but the blood which they contained was unusually florid, and all the cavities of the heart were quite empty. The vessels on the surface of the brain appeared to be somewhat congested with pink blood; the sinuses were not well filled; the blood which they contained, as well as all that was found in the body, was quite fluid and of a red colour. Extensive vesication existed over the greater part of the body in all these children, and especially on the posterior surface of the trunk and of the extremities. The size of these vesications was very various; many were as

large as the palm of the hand. They were all broken; the evidence of their existence appears to have been the separation of the cuticle. In some of the corpses the cuticle of the foot had become detached, carrying with it some of the toe-nails. The skin of these parts of the surface was of a crimson colour, and that between the vesications was of a rose-pink tint, especially near the vesications. The hands were the parts most burnt. In one child the left hand was terribly burnt, the last two phalanges of the fingers being absent, and the remaining ones protruding through the charred tissues. The areolar tissue beneath the skin was of a brilliant red colour, the intensity of which varied with the hue of the skin. In two of the children fissures existed along the back of the right forearm and wrist, which were four inches or more in length, and three or four lines in depth; they were straight, with clean edges, as though cut with a knife; some of the tendons were exposed, but apparently were not injured. These fissures contained no blood. On the faces of some of the children there was a small quantity of adipose matter, which had apparently burst through the skin in a melted condition, and had afterwards solidified. These injuries were apparently produced, not by flame, but by intensely heated air. The night-dresses of the children and the bedding of the room were not much burnt.

HANGING.

Prof. Maschka, in his paper on medico-legal errors (in the 'Präg. Vjschrft.,' 1863, vol. iii, p. 13), makes some observations on death from hanging. He records the case of a woman who was found with her throat cut, and with a mark on her neck of a yellow colour, and in a hard, parchment-like condition, evidently produced by a rope. Her husband asserted that he had found her hanging, and had cut her down some hours before she made a second and successful attempt at suicide by cutting her throat. It was argued by certain medical jurists that this could not be true, because, if it were, the mark of constriction would have disappeared before death. Maschka, however, states that he has in three instances observed the mark on the neck to remain visible for several days after resuscitation from hanging.

He agrees with Casper that pallor of the face is no proof that hanging was not the cause of death. He also remarks that exudations of blood beneath the mark produced by the cord, though frequent and extensive in those who are executed by hanging, are exceptional under other circumstances. Fracture of the cervical vertebræ is also never found by him in other than judicial cases. He ascribes them both to the violent twist given to the neck by the executioner. The absence of exudations of blood beneath the mark on the neck is therefore not an evidence of the hanging having been post-mortem. He quotes a case recorded by Köcker ('Wien. Med. Woch.,' 1862, Nos. 33, 34), where a mark on the neck, caused by an iron chain after death, presented a considerable extravasation of blood, which was coagulated.

DROWNING.

Prof. Maschka ('Präg. Vjschrft.' 1863, vol. iii, p. 13) argues with Casper that the cutis anserina is no positive proof of death having been caused by drowning. He also thinks that it is not present more frequently in the bodies of healthy persons who have died suddenly than in

those who have died from disease, while Casper holds the contrary opinion. Maschka has frequently seen it developed some hours afterwards, when it did not exist at the time of death. Still less importance is to be attached to the soaked appearance of the hands and feet, since, if the body of a person immersed during life be removed soon after death from the water, this soaked appearance is absent, while it shows itself in bodies already dead, if they be kept in fluid for some time. The presence of sand or mud under the nails is also worthless as evidence of death by drowning.

Dr. Mayer ('*Bayer. ärztl. Intell. Bl.*,—'Schmidt,' Jan. 1863, p. 84) relates the following case:—Two persons, digging in a shaft, came upon a subterranean collection of water; the fluid rushed into the shaft so quickly that they were with difficulty saved. One of them, who never lost his consciousness, said afterwards that he resisted swallowing the water as long as he could, but that at length he was compelled to do it, as he was holding his breath under water, and making only expirations. Soon after his recovery he vomited a quantity of sandy mud. The other, a girl, evidently sucked the same substance into her air-passages, for she had a severe attack of pneumonia, and during the first four days mud was contained in the expectoration.

Houzé de l'Aulnoit ('*Gaz. Hebdom.*, 1863, p. 234) made an experiment to test the question whether fluids can enter the stomach after death. He placed some blue fluid in the mouth of a corpse, and left the body for three hours in an upright position. The cardiac orifice of the stomach was then ligatured, and on opening the organ none of the blue fluid was found in it. The œsophagus was equally free from its presence; but a blue tint in the larynx, trachea, and bronchi, showed that it had penetrated into these passages. The result of this experiment, therefore, is the same as that attained by others who have worked at the same subject.

Liman remarks ('*Casper*, xxi, p. 193) that this question is not of much practical interest so far as adults are concerned, for in them it is comparatively rare to discover substances of a specific nature in the stomach. But infants are often found in privies, when the only sign of death by drowning is the presence of fæces in the stomach. He has therefore instituted some experiments, which were made on newly born infants. He employed in these investigations, a mixture of garden-mould and peat-sand in water. The presence of this fluid in the corpses experimented on was discovered not merely by the colour, which had been found insufficient for the purpose, but also by the grittiness of the particles of sand. The bodies of the infants were placed in this fluid, lying on their back, with the face uppermost; the mouth was usually open. The results he obtained were that in sixteen experiments the fluid was detected seven times in the stomach, and in fourteen cases it was present in a greater or less degree in the œsophagus, trachea, and throat. Only twice were all these parts entirely free from its presence. The time during which the body lay in the fluid was without influence on these results. In two cases he found the fluid in the stomach when the body had been only two days immersed, and the same thing was observed even when the body was simply dipped in the fluid and immediately removed; while in other subjects, which lay some time in the fluid, this was not found to be the case. The degree of decomposition was also found to be immaterial; in two bodies which had been preserved in an ice-cellar fluid had entered the stomach, but in a

decomposed fœtus nothing was discovered in that organ. It is also a matter of indifference whether the body be held by the legs or by the head when it is removed from the fluid. The importance of finding substances of a specific nature in the stomach of an infant is therefore, so far as experiment is concerned, reduced to the same level as that of their presence in the parenchyma of the lungs. They are not to be taken as proof that the child was immersed in the fluid during life. The fact that only solid substances are present in a particular case is not of greater value, for the fluid which entered the stomach at the same time may have passed away by evaporation. Liman observes, in reference to the presence of frothy fluid in the lung-tissue, that it may often be detected when the head has already become black from decomposition. It disappears much more quickly from the air-passages. It is one of the most useful signs of death by drowning; but it may also be present in any slow form of death by suffocation, as, for instance, in cases of poisoning by carbonic-acid gas. It affords no proof that the drowning person rose to the surface after having been immersed, as is supposed by some authors. He attaches great importance to the increase in the volume of the lung, which is insisted on especially by Casper. Without any exception, he has found the lungs in drowned persons, not only filling the chest, but protruding when the sternum is removed. The value of this state is increased by the fact that it may be observed after the disappearance of all the fluid from the air-passages, and when the condition of the blood has ceased to give any indication as to the cause of death. The anterior parts of the lungs are especially distended, and their air-cells may even be ruptured. A condition similar, but always, according to Liman, less marked, is found in other forms of suffocative death, as in cases of bronchitis and of œdema of the lungs.

Dr. Richardson ('Lancet,' 1863, vol. i, p. 550) records the successful application of a process by which the appearance of a body, decomposed and altered by immersion in water, may be restored, so that it can be identified. The plan which he recommends is as follows:—The naked body is to be placed in a water-tight shell, into which a large tap for the escape of water has been fitted; and a stream of the fluid should be allowed to pass over it, so as thoroughly to cleanse it. The body is then to be covered with water, and to be fixed beneath the surface of the fluid; and a lid, in which two apertures have been made, is to be fastened on to the shell. Through one of these openings a stream of chlorine gas is to be passed into the water in the shell; through the other a glass tube is to pass, which is to be bent, so as to pass beneath the surface of water in a glass vessel. The escape of chlorine by this tube indicates the saturation of the fluid in the shell with the gas. The shell is then to be completely closed, and left undisturbed for twelve hours. The object of this proceeding is to remove the black colour of the skin and to render it white. At the end of this time, a quantity of common salt is to be added to the liquid in the shell, until it has a specific gravity of 1100. Exosmosis will take place from the body into the fluid, and this will reduce the tumefaction; the body is to be left in this solution during another twelve hours. If necessary, a further improvement of the appearance of the face may be effected by injecting into the external carotids, first two or three ounces of a solution of chlorine, containing about Mxx of Tinct. Ferri Sesquichlor., and afterwards a saturated solution of common salt in milk, the injection

being carried just far enough to produce a slight tension of the structures of the face. If it be desired to keep the body for some time, it should be covered with methylated spirit, containing a little Tinct. Ferr. Sesquichlor., and the air should be excluded.

In the case in which Dr. Richardson conducted this process he was only able to carry it out during six hours. At the commencement the face was as black as that of a negro; the lips were immensely distended, and the nose was scarcely visible. It could not be identified. When a stream of chlorine gas was passed over the face, its colour changed to a whitish tint; but as soon as the current of gas was stopped, a grayish or clay-like hue returned. The result of the adoption of this method was that three witnesses were able to swear positively that the body was not that of a suspected murderer.

STERILITY.

Mr. Curling ('Lancet,' vol. ii, p. 11) discusses the question of sterility in the male sex, showing that it may coexist with perfect virility, the semen being found to contain no spermatozoa. He decides that marriage is not justifiable when this condition is known to exist, but he thinks that its discovery after marriage is not a sufficient ground for divorce.

RAPE.

Moriz ('Casper,' xxiii, p. 337) relates a case of rape of a girl, aged six years, followed by strangulation, and remarkable from the extent of the injury inflicted. The child was found dead, and the perpetrator of the crime was not discovered, though a man was noticed to be with her on the day when she was last seen alive. The vagina was open, and had a diameter of one inch and a quarter, the hymen was torn across, and the laceration extended three eighths of an inch into the perinæum. The edges of the wound were sharp, but infiltrated with blood. At the entrance of the vagina numerous spots of coagulated blood existed beneath the mucous membrane; similar extravasations were found in the whole length of the canal, which was not otherwise injured, though it appeared to be dilated. Some spots on the child's clothes resembled semen, but were not proved to consist of that fluid. There is, therefore, no absolute certainty as to the mode in which the injury was produced.

CÆSAREAN SECTION.

Dr. Berg ('Casper,' xxiv, Heft 2, p. 219) cites the Russian law as to the performance of this operation in women who die during pregnancy, and discusses the changes in it which he thinks advisable. He believes that there is no chance of saving the life of the infant for more than a very short time by this means; but it not rarely survives some hours, so that it can be baptized. At present there are legal obstructions to the performance of this operation in Russia which ought to be removed. The surgeon must inform the police. They summon the legal deputies to the spot, and the medical man is then commissioned in writing to perform the Cæsarean section in presence of the deputation. It is not difficult to conceive that, after these formalities have been gone through, no success is ever attained. The law which Dr. Berg recommends is the following:

1. All medical men, without exception, to practise this operation as soon as they receive information of the death of a woman during preg-

nancy. After the operation is completed they must communicate the result to the police and to the public medical authorities.

2. The Cæsarean section is, however, only to be performed under the following circumstances:—(1) When no other obstetrical operation can save the life of the fœtus. (2) When the woman has reached the thirty-third week of gestation. (3) When the medical man is fully convinced that her death has actually occurred. (4) When she has not been more than twenty minutes dead.

3. The same care is to be observed as in the living subject, and the rules of obstetrical practice are to be carried out; the necessary strappings are to be applied in order to close the wound. Burial of the body is not to take place till putrefaction has commenced.

4. The operation is not to be performed when the woman died of any disease, as, for example, cholera, which is known to kill the fœtus in utero, before the mother.

INFANTICIDE.

Casper ('*Vjschrft. f. Ger. Med.*,' xxii, Heft 1, p. 1) gives a full account of some experiments made by him in order to ascertain the effects of injuries of different kinds on the skulls of infants. He thinks that it is indubitable that the methods which are adopted to conceal the bodies of children born in secret, whether born dead or killed by accident or intention, often produce injuries which may be attributed to ante-mortem violence. The existence of hyperæmia of the brain, or an increase in the extravasation beneath the cranial integuments, might easily, when accompanying such injuries, lead to the most serious errors. The frequency with which such questions arise is shown by the fact that examinations of the bodies of infants form a fourth part of the medico-legal autopsies performed in Berlin.

Hohl has denied that the completion of birth ever occurs while the mother is standing, but Casper cites cases which sufficiently refute this statement. He also quotes a case narrated by Heyland, in which the fœtus, expelled whilst the mother was in the erect posture, fell on a brick floor. No injury could be detected at the time, but the infant died of atrophy at the end of three weeks, and the remains of an extravasation of blood were then found between the dura mater and the right parietal bone. At this point the inner surface of the bone was rough and hollowed out, and the vitreous table was absent. The outer surface of the bone was also roughened. This case appears to show that injuries to the fœtal skull may arise from falls on the floor during birth, and twenty-five experiments were therefore made to determine this point. The bodies used were those of newly born children, in some cases of children a few days or even some weeks old. In some instances decomposition had commenced, but in none was it complete. They were held by the feet suspended, so that the head was two and a half feet from the ground, and were allowed to fall—in ten of the experiments on an asphalté floor, in fifteen, on the stone pavement of the street.

As a rule, no injury which was visible on the surface was produced in this way, but fractures of the bones were found in every instance but one, and this one exception is not very important, for the body was that of an immature fœtus, with very yielding bones. As would be expected from

what is observed during parturition, the parietal bones were most frequently broken. Fracture of one parietal bone was found sixteen times, and fracture of both parietal bones six times. In one instance one part of the frontal, as well as one parietal, was broken; once the fracture occupied both portions of the frontal, without involving any other bone; and once the occipital alone was the seat of it. Hence it would appear that the presence of numerous fractures of different cranial bones does not admit of explanation in this way. The form of these injuries is also peculiar. Almost without exception, they radiate from the parietal protuberance. One, two, or even three, fissures extend from this point to the margin of the bone; one of them, perhaps, extending across the sagittal suture into the opposite parietal bone. In two of the experiments a small portion of the bone was altogether broken off.

In other experiments the bodies of infants were subjected to injuries of different kinds. In two instances the corpse of a fœtus was allowed to fall from the post-mortem-room table on to the floor; the parietal bone was fractured in each case. When the head of a child was trodden on with heeled boots, fractures were always produced; they were seated, not only in the parietal bone touched by the boot, but also in the opposite one, and they resembled very much the effects of violence done to the living infant. Extensive injuries to the bones were also caused by dashing the fœtal head violently against the wall or against the corner of the table.

In another series of experiments the child was buried, and the ground was then stamped down till it was level. The corpse was only placed two or three inches beneath the surface. No injury resulted to any part except the head. In three of the four experiments extensive fractures of the cranial bones, on the side to which the force was applied, were found. In the fourth case no effect whatever was produced.

On the other hand, forcible compression of the fœtal head with the hands, repeated three times, gave rise to no injury. Negative results were also obtained in two experiments in which corpses of infants were placed on a hard surface, and a strong man then lay suddenly down upon them. Compressing the fœtal head into a narrow space produced, in two instances, no fracture of the bones, while in the third a small cleft extended from the lambdoidal suture into the left parietal bone, and the coronal suture was separated for a short space. Casper remarks, however, that too much reliance must not be placed on the absence of fractures in many of these experiments, for in the adult the dead cranium offers far greater resistance to violence than the living, and this may be the case also in the infant.

Direct blows on the fœtal head with a mallet or a block of wood produced, of course, extensive injuries of the bones. But in these, as well as in all the other experiments, the fractured edges of the bones were very different from those which are found when the injury has been inflicted during the infant's life. They were quite smooth and sharp, and are compared by Casper to cracks in glass; they were also not infiltrated with blood. In only five out of the sixty observations were the edges finely toothed at certain parts. On the other hand, fractures of the living bones are irregular and angular, and their edges are more or less infiltrated with blood. Detachment of the dura mater from the bones, separation of the sutures, extravasations of blood beneath the pericranium, and the forma-

tion of conglobula at the seat of fracture, are by no means peculiar to injuries inflicted on the living subject. Extravasations of blood, usually more or less coagulated, were almost constantly found in these experiments, and the other appearances mentioned were far from infrequent.

Appended to this paper are reports of nine cases in which the facts ascertained by these experiments were applied. In Cases 1 and 4 the fractures were far more numerous than those observed in these investigations; but, from the characters presented by the broken edges of the bones, it was concluded that the injuries had occurred after death.

Prof. Luschka ('Hennele's Ztschrft. f. rat. Med.,' xviii, p. 188) draws attention to the peculiar condition of the lips in newly born children, consisting of an outer smooth zone and an inner villous zone, with a well-marked furrow between them. When the mouth is gently closed, the appearance of a double lip is produced. The inner zone is obliterated as the infant grows older. It is of interest, chiefly because after death it becomes dry and brown, resembling an eschar, the desiccation extending even into the submucous tissue. In a case recorded by Maschka ('Präg. Vjschrft.,' 1863, vol. iii, p. 13), this appearance gave rise to the idea that death arose from violence, and it might easily suggest the suspicion that sulphuric acid or some other destructive agent had been administered.

In the same paper, Maschka observes that a dried, parchment-like condition of the umbilical cord of an infant is no proof that it lived after birth; the funis itself undergoes exactly the same changes in the dead as in the living child. Hæmorrhage from the umbilical cord very rarely occurs in children who breathe well, and in whom it is not cut very short. The absence of blood in the body is an important indication of this mode of death; but it is well to remember that decomposition may also cause the disappearance of blood from a corpse. In a case related by Mascarel ('Un. Méd.,' lxxviii, 1863) the fact that no hæmorrhage had occurred from the funis, though no ligature had been applied, led to the conclusion that suffocation was probably effected during birth rather than after its completion. A folded cloth was tied over the face, so as to cover the mouth and nose. If this cloth had not been found *in situ*, it would have been impossible to say how the asphyxia had been occasioned, for no mark was produced by it on the neck or face. Dr. Chléborad ('Allg. Wien. Med. Zeit.,' p. 60) gives a case of infanticide in which suffocation seems to have been produced in rather an unusual way. A cloth twisted up into a cord was found passing under the left armpit and over the chin and the right side of the head, so as to bind the head down to the left shoulder. It produced a deep furrow in the skin, and an ecchymosis and swelling in the temporal region; it was therefore evidently applied during life. Chléborad ascribed death to the forcible compression of the chest and neck. Another case given by Maschka (*loc. cit.*) is the following:—An infant was found dead, and an argument in favour of death having occurred from violence was drawn from the fact that the nostrils appeared to be compressed, and the tip of the nose flattened. This was, however, set aside by Maschka, on the ground that during the first hour after death parts return to their original position as soon as pressure is removed. It is only when rigor mortis is coming on that a permanent distortion can be produced by compression.

REPORT ON PUBLIC HEALTH.

BY

DR. C. HILTON FAGGE.

CAUSES OF DISEASE.

THE address on Public Health by Prof. Christison, at the meeting of the National Association for the Promotion of Social Science, held in Edinburgh, 1863, contains some interesting views as to the causes of some forms of disease. Scotland is now altogether free from ague, yet formerly this disease was very prevalent in some parts of the country, for example, in the counties of Berwick and Roxburgh. He doubts the correctness of the theory, that this has arisen from the improvements in drainage, which occurred about the same time, for he states that the disappearance of ague preceded the introduction of improved drainage. The cause of relapsing fever is, he thinks, penury and deficiency of ventilation. Sporadic typhus is not, in his opinion, caused by infection: at least, those cases of it which occur in the higher ranks of life, are not attributable to that cause, for it is found that, with the most ordinary care, the disease does not spread from the patient to those who visit or nurse him. Yet they must be far longer exposed to its influence than was the affected person. Equally untenable is the view that it generally originates in faulty drainage or in foul air. During the last ten years the number of cases of typhus in Edinburgh has undergone a remarkable decrease. The drainage has also been improved; but the decrease of fever began decidedly before the commencement of that reform. Dr. Christison himself ascribes it to a change of type and constitution in epidemic disease. He also dissents from the view that enteric fever is in any way caused by faulty drainage. This form of fever has been increasing in Edinburgh recently, while the street drains have been improved. No cases occur in or near the celebrated "foul meadows" of Craigentenny, nor can individual cases of the disease be traced to any such cause.

The causation of phthisis is then considered. He thinks that it arises chiefly from a conjunction of defective exercise and of exclusion from the open air. He then quotes the statement of Dr. Macrae, that phthisis does not occur among the natives of the western islands. In Lewis the disease is said to be entirely confined to strangers temporarily resident there, and to natives who have contracted the disease elsewhere. Those who remain in the island are exempt from it, except in a few rare instances, when it has been brought on under long privation of food and exposure to cold. Dr. McColl, of Mull, bears out this statement. It is not supported by the Scottish register; but it is admitted that this is

too imperfect to be a safe guide in this question. According to this register, it appears that the total mortality in Scotland is lower than in any other kingdom in Europe, being only 1 in 48 annually.

OCCUPATIONS.

MM. Bécourt and Chevallier ('Ann. d'Hyg.,' July, 1863, p. 83) draw attention to the injurious effects produced in the workmen engaged in the manufacture of the bichromate of potass. Information obtained from an establishment at Rixheim shows that the preparation of the neutral chromate does not affect the health of the men employed. But during the conversion of the chromate into the bichromate, which is effected by the addition of an acid at a boiling temperature, the vapour carries off a number of fine particles, which are dispersed through the chamber, and are easily seen in a beam of sunlight. They have been proved to consist of the bichromate of potass. They enter the mouth, and give rise to a bitter metallic taste; but, as the fluids in that cavity are constantly being discharged and renewed, no ill effects are produced. Very different is the result when the molecules of the salt enter the nose with the inspired air. They then become dissolved in the fluid which covers the nasal mucous membrane, and cause extreme irritation, with increased secretion of the tears and incessant sneezing. This affection becomes established about five or six days after the workman is first exposed to the action of the salt. Soon portions of the mucous membrane covering the septum became detached and are found in the handkerchief, and after six or eight days the bony septum itself becomes thin, and at last is destroyed. An aperture results, which in one instance was one centimètre broad by one and a half centrimètre high. As soon as this has occurred, all the symptoms cease. The workman only knows that his septum is gone from the fact that all his distress is at an end. The sense of smell is unaffected. M. Clouet, the director of the manufactory at Havre, thought it rather more acute in his own case than it was before. All persons exposed to the action of the particles of the salt are thus affected. Two children of M. Clouet have already lost the septum nasi. There is a remarkable exception in the case of those who take snuff; either this substance protects the mucous membrane from the contact of the bichromate of potass, or the increased secretion from the mucous membrane prevents its injurious effects, for these workmen altogether escape this affection.

When applied to the uninjured skin, even concentrated solutions of the bichromate of potass produce no evil effects. The hand may with impunity be left in contact with the salt for a whole day. But if there be the smallest wound, such, for instance, as the prick of a pin, a smarting pain is felt when such a solution is allowed to touch the skin; and if its application to the sore is continued for a few minutes, it acts as a caustic, setting up violent inflammation, and destroying all the tissues, down even to the bone. The pain is found to be much more severe in the cold weather of winter than in warm seasons of the year. These effects occur most frequently in the hands, and the observation of them in a manufactory near Paris first led to the inquiry as to the injurious operation of this salt. The treatment of these sores, which experience shows to be the most

useful, is to reduce the inflammation by poultices, and then to wash the part affected with a solution of subacetate of lead in weak alcohol. Mr. Thyson recommends the application of a solution of nitrate of silver. By observing proper care, the workmen avoid these results of the contact of the bichromate of potass with the skin. In those who are insufficiently clad another effect has been observed. Violent itching of the skin and suppuration of the moist part of the penis are produced.

Similar local effects are observed in animals which enter the manufactory of this salt. Inflammation of the foot, with separation of the hoof, occurs in horses which tread in water containing the bichromate; and dogs, cats, and rats are also affected.

The effects produced by this manufacture were first observed at an establishment near Havre; but Mr. Thyson, of Baltimore, has written to confirm these statements in every essential particular. It is not yet known whether similar symptoms are produced in the workmen employed in this occupation in England and Germany. At Baltimore a piece of sponge is placed in each nostril, and this is found to protect the men from the action of the salt on the nose. In the French manufactory only those men who have already lost the nasal aperture are allowed to enter the chambers in which the ebullition of the salt takes place; but even then the affection is often caused in other workmen by their introducing the end of the finger, covered with the bichromate, into the nostrils. It is necessary to add that MM. Bécourt and Chevallier do not state that they have verified these statements, or that any surgeon has done so.

Caoutchouc soufflé.—M. Delpech had already pointed out the injurious action of the bisulphide of carbon on workmen who use it in their business. He now ('Ann. d'Hyg.,' 1863, Jan., p. 65) investigates these effects as they show themselves in those who make the coloured balls containing gas which are sold as toys. In preparing them, a hollow globe, the size of a walnut, is made of caoutchouc. This is then dipped for two minutes into a liquid containing sulphide of carbon, with a small quantity of chloride or bromide of sulphur. The effect of this operation is to soften the caoutchouc, and to give it the peculiar impermeability which enables it to be blown into a large globe. A small quantity of the vapour of the sulphide of carbon is diffused into the workshops, and may always be detected by the smell. The men are subject to symptoms of a peculiar kind, which are divisible into two periods, though in many cases mixed forms are observed. A stage of excitement is first produced, characterised by headache, pains and cramps in the limbs, giddiness, and dimness of sight. The mind is also disturbed; there is loquacity, causeless laughter, or weeping; and even mania may occur. Epileptic convulsions have been observed in two cases, and frequently during experiments on animals. The gustatory sense is often perverted, everything tasting of sulphur. Menorrhagia is not infrequent in women, and great excitement of the sexual desires in men. This condition is followed by a period of depression. The symptoms are now the following:—lowness of spirits, somnolence, loss of memory, anæsthesia of the skin, dimness of sight, and deafness. The sexual functions are especially perverted; there is impotence, with loss of desire and of the power of erection. In a boy who had been employed in one of these workshops from the age of ten, the

testes remained undeveloped. Women, too, lose the same feelings, and very rarely bear children. There is also some reason to suppose that atrophy of the mammæ occurs. Another symptom is muscular paralysis; this is often of a paraplegic form, and it is possible that it and the anæsthesia of the legs may be due to the direct local action of the vapour, for its high specific gravity causes it to accumulate in the lower part of the room. A numb condition of the hands is often noticed after they have been exposed to the action of the liquid. The prognosis of this affection is not very unfavorable. Those who leave the workshops recover; but as a rule, only imperfectly.

In one establishment these effects have been prevented by placing a partition between the workmen and their work, with holes in it for their hands to pass through, these being further closed by impermeable muffs, fixed round the wrists. Three workmen sit side by side, and between them complete the whole operation. Phosphorus has been found very useful in this affection, in doses of from one to three milligrammes.

The nature of the effects produced by sulphide of carbon has suggested the idea that the inhalation of its vapour might be useful in the treatment of hysteria and of nymphomania.

Lucifer matches.—Dr. Bristowe ('Fifth Report of the Medical Officer of the Privy Council,' p. 162, Appendix) has visited all the establishments known to exist in England for the manufacture of matches. They are fifty-seven in number, and 2500 hands are employed. He could get authentic information of no more than fifty-nine cases of necrosis of the jaw having arisen from this occupation. The number is now probably not more than two or three annually. It is believed that the disease might be entirely prevented by effective ventilation, and by restricting as much as possible the number of workmen exposed directly to the fumes. A very striking instance of the good results which follow the observance of these precautions, is that of a manufactory in which twenty-four cases had occurred, but in which not a single example of the affection has presented itself since these changes were adopted. Dr. Bristowe obtained no evidence that this occupation affects the health injuriously in any other respect. He does not quite accept the ordinary view that caries of the teeth is a necessary antecedent of this disease, though he thinks that it is preceded by, and dependent on, some local unhealthy condition. It does not seem to occur in factories in which phosphorus is used for purposes other than the making of matches.

Carbonaceous disease of colliers.—M. Kuborn, in his work on the diseases of colliers (Paris, 1863; 'Gaz. des Hôp.,' 77, 1863), comes to the following conclusions:—(1) Particles of carbon are inhaled, and line the bronchia and air-cells; they also enter the tissue of the lungs, and are taken up by the radicles of the lymphatics, and carried to the glands. (2) The black substance expectorated by these men, and that found in their lungs, is really "fossil carbon," and is not deposited from the blood. (3) It is not injurious, like silica or the powder of steel; and it does not predispose to the development of phthisis, though it may lead to disturbance of the respiratory circulation and to the development of pulmonary emphysema. It may also aggravate bronchitis. (4) The so-called melanotic phthisis is a compound affection; it consists of various forms of

pulmonary disease, one of which coexists with the black deposit in each case. (5) The black colour of the sputa is of no value in the diagnosis of this affection. In true melanosis it is of importance.

Mine disease.—Rawitz ('Pr. Militärärzt. Ztg.,' 11, 12, 1862; 'Schmidt,' 1863, i, p. 85) looks on the affection which occurs in mines, and which was first described by Josephson, as an effect of poisoning by sulphuretted hydrogen gas, the action of this substance being exerted on the blood, and especially on the blood-corpuscles. Those who have suffered from it several times say that they first perceive a sweetish taste in the mouth. This is followed by profuse sweating, a general relaxation, and loss of consciousness. When the senses return, severe headache is experienced. Where the quantity of the gas is small, headache is alone produced, or in some persons giddiness, with weakness of the limbs. The most severe symptoms generally occur when the workman goes out of the mine into the fresh air.

From eleven cases observed by him, Rawitz thinks that there are only two distinct forms of this affection—the one being of a narcotic kind, with predominant depression of the nervous system, pale and cold face, slow and almost imperceptible respiration, and thready pulse; and the other being attended with excitement and with convulsive symptoms, or even with tetanic spasms.

Glass-blowers.—M. Diday ('Gaz. Méd. de Lyons,' 1862; 'Ann. d'Hyg.,' Jan., 1863, p. 225) draws attention to the frequency with which syphilis is transmitted through the buccal fluids in glass-blowers, who succeed one another quickly in blowing through the same pipe. M. Chassagny therefore recommends that each workman should have an intermediate tube, used by himself alone, and passed into the pipe now employed.

Millstone-cutters.—M. Laboulbène ('Gaz. Méd.,' 1863, xviii, p. 438) describes the condition of the hands in those whose occupation it is to cut or dress millstones. Small particles of steel, detached from the instruments which they use, enter the backs of their hands, and especially of the left hand. They lodge in the skin, and even penetrate into the subcutaneous tissue; and they form a number of blackish, raised points. Their presence gives rise to no pain or inconvenience. Some striking cases are given, which show that they remain for many years. They were recognised in an old man, æt. 67, who was a patient in the Hôtel Dieu. He was much surprised at being asked whether he had ever worked in this way, and said that he had done so up to the age of twenty-six years, but not since that time. These metallic particles are not found in all those who dress millstones; but the length of time during which they remain in the skin might render them of great importance in questions of identity.

Stonemasons.—Dr. Greenhow ('Lancet,' 1863, p. 262) gives some cases of bronchitis in stone-dressers, stonemasons, and others. He finds the tincture of larch very useful in these cases.

Working in compressed air.—An account of the physiological effects of this employment, as observed by M. Bucquoy, is given in the 'Year-book,' 1862, p. 4. Dr. Foley ('Gaz. Hebdomadaire,' 1863, No. 32) and Sandahl ('Schmidt,' 1863, No. 11, p. 172) give a similar description of them.

Drs. Babington and Cuthbert ('Dub. Quar. Jour.,' lxxii, p. 312) record six cases in which paralytic symptoms occurred in men who were em-

ployed in making the bridge over the Foyle, at Londonderry, and who worked in compressed air. The first is that of a man, aged twenty-eight years, who had worked for four hours under a pressure of twenty-three pounds to the square inch, and in passing into the external air became insensible. He died in twenty-four hours; among the symptoms observed were partial paralysis of the face on the right side, strabismus of the right eye, the pulse weak and irregular, the inspirations irregular, jerking, twenty-four to forty-four in the minute. Twelve ounces of blood were taken from the arm after the symptoms had persisted for some time; it was then found to be black, viscid, and treacly. No good effects resulted from this venesection. Another case was fatal, with symptoms almost exactly similar. Two other cases terminated in death; in one of these a semi-comatose state occurred at the commencement, and when this passed off all the parts below the fourth rib were found to be paralysed; the loss of power continued; bed-sores were the immediate cause of the fatal result. The other case resembled this closely. Two men, who recovered, were also affected with symptoms which were very similar in each case. The most important of them were severe pains in the legs and thighs, coldness and numbness of the hands and feet, so that the toes, placed near the fire, became severely burnt without any pain being felt. It is unfortunate that no autopsy was made in any of these cases; in all of them symptoms first arose when the workman was leaving the cylinders in which the air is compressed. The pressure under which the men worked varied from twenty-seven to thirty-eight pounds, and in one instance reached forty-three pounds on the square inch.

In Sandahl's paper is given an account of institutions for the use of compressed air in the treatment of disease, which have been established at Montpellier, Lyons, and Nice. The pressure is not allowed to exceed one and one fifth to one and two fifths atmospheres. Good results have been obtained, especially in cases of chronic bronchitis and of emphysema. Even in phthisis, palliation of the symptoms has been observed.

GLAZED VESSELS.

M. Chevallier ('Ann. d'Hyg.,' 1863, p. 280) says that some forms of glazed vessels produce injurious effects, which are surpassed only by those which arise from the use of copper utensils. He quotes two cases of lead colic, caused by gherkins which had been left in a glazed earthen vessel. In other instances symptoms have been produced through grapes which had been left to ferment in such jars, or through cider placed in them. He made a series of experiments with different kinds of pottery, exposing them to the action of acetic acid in the cold, of the same acid assisted by the application of heat, and of nitric acid of the strengths of one fortieth, one thirtieth, and one twentieth. The yellow and brown vessels resisted the action of vinegar in the cold; one only was acted on by vinegar in the warm. The ordinary green and yellowish pottery of Paris is less safe. The value of these investigations was much diminished by the impossibility of ascertaining the origin of the different specimens examined. M. Chevallier, therefore, recommends an official inquiry into this subject.

COLOURS.

Dr. Guy ('Fifth Report of the Medical Officer of the Privy Council,' Appendix) gives a long account of the uses and effects of the arsenical colours. Dr. Hassall ('Lancet,' 1863, p. 294) describes the purposes for which arsenite of copper is used in the arts. He also draws attention to the Brunswick green (a mixture of chromate of lead and Prussian blue), the effects of which on the health are not yet known.

FOOD.

Mr. Gamgee ('Appendix to Fifth Report of the Medical Officer of the Privy Council') gives some most important information as to the state of the meat which is eaten in this country. His paper is one which should be read, and which it is impossible to condense into the space at our disposal.

In considering the effects produced on human beings by the ingestion of meat, it is important to distinguish between diseased and decomposed flesh. It is probable that, under certain circumstances, a poison is developed in the carcasses of animals similar to that the effects of which are observed in dissecting-rooms. This poison may have relation to previous disease, and especially to the parturition fever, but it is not certain that this is the case. It is destroyed by the process of putrefaction.

The diseases which occur in the animals used for food are divisible into three great groups.

The first class consists of the epizootic diseases, including the pleuropneumonia of horned cattle, the epizootic aphtha, and the variola ovina. Mr. Simon thinks that it is not at all certain that eating the flesh of animals affected with disease of this kind is immediately injurious to man. If it were, irrefragable proof of it would have presented itself ere this. But it is still an undecided question whether chronic ill effects may not result when such meat forms a considerable part of the food taken. Boils and carbuncles have been very common of late years; at a convict establishment where diseased cattle, and especially those affected with lung-disease, are eaten in large quantities, as many as forty or fifty cases of these affections occur among 1520 convicts in a month.

The second class consists of the enzootic (anthracic and anthracoid) diseases. The evidence as to the effects of consumption of the well-cooked flesh of animals which die from these diseases is still imperfect, but there is positive proof that it may endanger human life. In 1840, on a farm in Aberdeenshire, a two-year-old quey was attacked with the quarter-ill, as was supposed. It was at once slaughtered; the flesh appeared to be healthy, except that circumscribed ecchymosed spots were seen scattered over it. The same day part of it was cooked for dinner; two persons who did not partake of it remained well, but the nine who ate it were all seized with symptoms of poisoning, suffering from vomiting and diarrhoea, attended with great prostration. Two of them died; the others recovered. In a few days, the two men who slaughtered the cow were attacked with phlegmonous erysipelas of the arm. One of them had a large malignant pustule on one knuckle; he had cut himself at that spot while skinning the cow. In the other case no local cause could be dis-

covered. They both ultimately did well. Two swine which ate the offal of the cow also died.

Animals affected with diseases belonging to this class are extensively slaughtered; and their flesh is eaten, with the exception of the gangrenous parts.

Thirdly, there are the parasitic diseases. These affections are probably better known by medical men in this country than those belonging to the other classes. Flesh from animals killed on account of the "staggers" (*cœnurus cerebralis*) has been known to produce severe symptoms in a family, which, in the case of one child, proved fatal. A country butcher, while skinning and dressing a number of sheep affected with rot (*distoma hepaticum*), complained greatly of the sickening smell; the same evening he was attacked by choleraic disease, and the next day he died. Evil effects have been witnessed when human beings have eaten the flesh of sheep slaughtered because affected with the distoma, but this has been attributed to the rapid putrefaction of such meat.

The most frequent consequence of eating flesh affected with parasites is, however, the propagation or development of the animal within the human body. This has long been well known to be the case with the cestoid worms; and recently it has been proved that another parasite, the *Trichina spiralis*, is capable, when eaten in pork, of producing fatal disease. The symptoms in a case recorded by Prof. Zenker, of Dresden, at first resembled those of typhoid fever. Intense pains in the extremities, with œdematous swelling of the legs, then came on, and death occurred a fortnight after the patient's admission into the hospital. The muscles had a grayish colour and a freckled appearance, and were found to be loaded with trichinæ, which lay within the sarcolemma of the primitive fibrils, and were not enclosed in capsules. Four days before she was taken ill, two pigs were slaughtered in the establishment of this girl's master. Some ham and sausage prepared from one of these animals was found to be full of trichinæ. She had probably eaten some of the raw meat. The butcher was taken ill about the same time, and was confined to his bed for three weeks, suffering from severe muscular pains, with a semi-paralytic condition. This affection was probably caused by an immigration of trichinæ, not extensive enough to cause death. The female trichinæ produce young in the human alimentary canal. In the intestinal mucus of the girl who died immense numbers of them, full of well-developed embryos, were found. These worms have the power of resisting influences which destroy other parasites.

Meat may also produce poisonous effects in man, in consequence of its being impregnated with metallic or vegetable substances, administered to the animal in large quantities during life. Cases are recorded of this kind, from the ingestion of the flesh of an ox to which two ounces of tartar-emetic had been given. This case is probably exceptional.

It is yet uncertain how far the milk from diseased cows is capable of producing injurious effects. The question is practically confined in this country to the milk of cows affected with epizootic aphthæ. It has been supposed to produce disorder of the stomach and bowels in infants who are fed with it; but this is doubtful. There is no doubt that the disease itself may

be transmitted to the human subject through a wound; and, according to Mr. Gamgee, this may also occur through the milk, which acquires contagious properties, apparently from the rupture of vesicles on the teats. Milk from animals affected with anthrax has been known to produce injurious effects, but not in this country.

Milk.—Vogel (Erlangen, 1862) proposes the following simple test for the presence of water in milk. A vessel with flat sides is nearly filled with water, and the milk to be tested is poured in, drop by drop, till a taper, placed at a fixed distance behind the bottle, becomes invisible. It is found that the quantity of pure milk which is required to effect this result, is constant; in proportion to the dilution of the milk with water, the quantity dropped into the vessel will of course increase.

Oysters.—Symptoms of poisoning were produced by some oysters at Rochefort, which had been brought from Falmouth, where there is a copper-mine in close vicinity to their beds. They had a bright vegetable-green tint, and a viscid matter, resembling verdigris, exuded from the lobes of the mantle in many of them. M. Cuzent easily detected copper in them by pouring ammonia over them, when a deep-blue colour showed itself, or by introducing a steel needle into the green parts, and adding a little vinegar. Metallic copper was often deposited in less than a minute. ('Comp. Rend.,' 1863, p. 402.)

Bread.—Dr. Pellischek ('Oester. Ztschr. f. Prakt. Heilk.,' 1862; 'Schmidt,' 117, 1863, p. 287) relates an instance of the contamination of some flour with the seeds of the *Melampyrum arvense*. The flour was not of an unusual colour, but the bread made from it had a peculiar dirty violet hue; the extractive obtained by the action of lactic or acetic acid on the flour assumed, when evaporated, the same appearance. This reaction is known to occur in a chromogen which is contained in the seeds of the *melampyrum*, and portions of the seed were detected in the flour. No evil effects followed the eating of this bread; and if the colour be not objected to, such flour may be used without fear. The fact that the seeds of this plant give this tint to bread is mentioned in a book published at Lyons in 1782. Pellischek adds some remarks as to the effects of the intermixture of other seeds with corn. Those of the *Agrostemma Githago*, and of the *Thlaspi arvense*, give to bread an ash-gray or blackish hue, and a sharp, bitter taste. They have been said to produce a violet colour, but this is not correct. The *Rhinanthus major* and *minor* cause a bluish-black tint, a disagreeable sweet taste, and a damp sticky condition of the bread. The *Polygonum Fagopyrum*, and the *trifolium arvense*, produce a violet-red colour. They are not injurious to the health. Seeds which are of a less innocent kind do not affect the colour of the bread which contains them. The *Lolium Temulentum* is well known to produce narcotic symptoms. Their occurrence may, however, be avoided by drying the grain in an oven before it is ground, or by keeping the bread some days. The process of fermentation does not destroy its injurious properties. It may be detected by treating the suspected flour with alcohol. This soon acquires a greenish colour and a disagreeable, astringent taste, if the lolium be present; and on evaporation, a greenish-yellow, resinous substance is left. The seeds of the *Bromus secalinus*, when present in large quantities, make the bread disagreeable and indiges-

tible, and give it a blackish colour. They are said to give rise to headache and giddiness, but of this Pellischek could not convince himself. Those of the *Raphanus Raphanistrum* are said to produce raphania. Among fungi, the following forms are noticed:—The rust (*Rubido* or *Puccinia graminis*) gets on to the grain only accidentally, as during thrashing. It is recognised by its transparent cylindrical spores, which are long and pedunculated. It affects the colour of the flour which contains it, but is said not to be injurious to animals. The smut (caries or sitophila) gives a bluish colour to bread, making it also sticky and disagreeable to the taste. It is stated to produce ill effects, but of what kind is not mentioned. The affected grains may be separated from the healthy by sifting, or by winnowing, or by the action of water, for the diseased grains float. The *Uredo segetum* rarely occurs in flour, but it clings to the straw, and is prejudicial to cattle.

Living creatures occur only in flour which is quite unfit for use. They are the *Acarus farinalis* (which generally indicates that the seeds of some leguminous plants have been mixed with the grain), the *Asopia farinalis*, the *Vibriones Triticci*. Such flour is usually damp and musty, and has been kept for a long time in a damp place; it has a bitter, disagreeable taste, and is injurious to health if used for food, and especially when it is whitish or reddish, and has already passed into a state of fermentative decomposition.

The adulteration of flour with inorganic substances is best detected, as advised by Redtenbacher, by shaking up the suspected specimen with chloroform. All mineral substances sink to the bottom when the fluid is allowed to stand, while the flour floats on the surface.

M. Commaille ('Gaz. Hebdomadaire,' vol. x, 1863, p. 4) investigated the nature of a thick layer of a substance which had a red colour, and was found covering the surface of some bread. He found it to consist of three fungi—the *Oidium aurantiacum*, the *Penicillium sitophilum*, and (probably) the *P. roseum*. He succeeded in transferring the fungi from the bread on which they were found to some which was unaffected, and also to starch, milk, and gelatine. Similar red fungi had been observed in Paris in 1842, and, to prevent their occurrence, it is recommended that some salt should be used in making the bread, and that the quantity of water employed should be diminished. Suspected flour should also be mixed with flour of good quality, and should not be used alone.

MM. Manoury and Salmon ('Ann. d'Hyg.,' 1863, p. 215) have recently traced an epidemic of colic in certain communes of France to the contamination of the flour used in the district with lead. This metal was found in large quantity in the depressions on the surface of the millstones in one particular mill.

Cider.—M. Housard ('Bull. de l'Acad. de Med.,' xxviii, 1862) draws attention to a disorder produced by the excessive use of this beverage. The symptoms are those of ordinary colic; there is little fever; the abdomen is slightly tender, but not hard, nor much distended. This affection is caused especially by drinking old cider, which has been kept two or three years, and contains more malic and acetic acids than fresh cider. Saline purgatives and castor oil are the best remedies. Should their action be prevented by incessant vomiting, castor oil is to be sub-

stituted for them. Ten centigrammes (gr. iss) are to be made into eight pills, and one of these is to be given every half hour till a purgative effect is produced. After recovery, cider must be ingested in small quantities only, or diluted with water, or wine should be drunk in its place.

Vanille ice.—Prof. Schroff ('Wien. Med. Wchnbl.,' xix, 32, 1863; 'Schmidt,' xi, p. 182) reports a number of cases of disease, attended with vomiting, and with almost choleraic symptoms, and apparently caused by eating a sort of vanilla ice. There are three ways in which it is possible that these effects may have been produced:—(1) The vanilla fruits are often coated over with the oil of the *Anacardium occidentale*. This oil is innocent if pure, but it often contains a juice which is found in cavities in the shell of the plant, and which has irritant and vesicant properties. Schroff generated by means of it an inflammatory affection of three weeks' duration on his own arm. Experiments made with this impure oil on rabbits appear to show that it is capable of producing the symptoms observed. (2) In the vanilla fruits are packets of crystalline needles, which occupy the parenchymatous structure of the middle substance. They are very large in the fruits used for making ices; they are said by Soubeiran to have urticating properties. (3) It has been supposed that, under certain unknown circumstances, a poisonous fatty acid may be formed; but there was no probability that this is the cause of the symptoms produced by the vanilla ice.

VACCINATION.

Dr. v. Bulmerincq, kais. Russ. General-Major, has published the results of observations made by himself, as to the relative advantages of the methods of vaccination practised in Russia, Austria, Germany, England, and France. He carried on his investigations during four years of travel. An account of them is given in Canstatt (1863, S. A., p. 44). He finds that the legal provisions for vaccination in the larger states are in many respects antiquated, and he thinks that the arrangements made in Bavaria are superior to those of all other countries. In that kingdom there is a constant co-operation of the vaccinating medical men with the local and higher authorities. Vaccination is compulsory, and "retro-vaccine lymph," that is to say, lymph transferred from man to the cow, is used. The results obtained in Bavaria are very satisfactory. In twenty-one years (from 1840 to 1860), only 8606 persons died of variola in that state, and of these, 3532 were children under one year of age, and 1162 were between one and five years old. It may be assumed that these were not vaccinated, and therefore they may be deducted, as they are not instances of defective protection. v. Bulmerincq recommends compulsory revaccination of the whole population, a measure which has been found so successful when applied to the militia of several German states. He gives some well-authenticated instances in which vaccination produced injurious effects on the health of the infant vaccinated. These consequences were, however, caused by the ignorance or carelessness of the medical man, and not by the operation itself. Vaccination should, therefore, be taught in a methodical way at a central vaccine institution. Foundling hospitals should never be used, as at Vienna, as the centres from which lymph is obtained. There is no security that illegitimate

children may not be the bearers of some latent poison. The offspring of healthy married persons should alone be used to maintain the supply of lymph.

Up to the year 1852 vaccine matter for Venetia and the adjacent provinces was obtained from London ('Giorn. Venet. d. Scien. Med.;' 'Canstatt,' loc. cit.), but in that year the vaccinations altogether failed, and it was therefore resolved to keep up a constant supply of lymph in the country itself. Each year five or six healthy young cows are inoculated with lymph taken from the arm of an infant on the eighth day after vaccination. It is introduced by a needle or lancet into the teats and surrounding parts, as well as into the neighbourhood of the vulva and anus. The position of the parts inoculated is noted, and after four or five days their condition is observed by a committee appointed for the purpose, and the day of opening the pustules is determined on. It is usually the seventh, or, at latest, the eighth day. The lymph is taken directly from the pustule into capillary tubes, which are distributed over the whole country. Up to the present time vaccination of children with this lymph has never failed. If the inoculation in the cow does not succeed, it is repeated two or three times till a good pustule is obtained. Goldoni, who suggested these arrangements, also proposed the imposition of a fine to be paid by parents and guardians who omit to have their children vaccinated within the first six months of their life. He also recommends revaccination every ten years, as the most likely plan to eradicate smallpox.

Dr. Vleminex draws the following conclusions from 2000 revaccinations performed with great care. ('Gaz. Hebdomadaire,' p. 377).

(1) Revaccination in persons already well vaccinated produces very little effect. (2) It is more likely to succeed in proportion to the length of time which has elapsed since vaccination was performed, or since an attack of smallpox occurred. (3) It is generally useless up to the twenty-fifth year. Between the twenty-fifth and the thirty-fifth year it succeeds in a small number of cases. (4) After the thirty-fifth year it is in most instances necessary to ensure protection from variola. (5) When revaccination is unsuccessful, the susceptibility to it may return at a later period; it may therefore be tried a second time.

Angenstein ('Casper,' xxi; 'Canstatt,' S. A., p. 44) has during the last ten years revaccinated 10,682 prisoners in Cologne. Those who had been operated on uniformly escaped variola, though it was several times introduced by new prisoners, and spread among the officers who were not revaccinated, and among those prisoners who had recently been admitted.

M. Bouley ('Un. Méd.,' 79, 1863) relates the following extraordinary occurrence:—A horse was affected with stomatitis. The fluid from its mouth was inoculated into the dugs of a cow, and produced there a pustule resembling the cow-pox. From this an infant, aged eleven months, was inoculated with the cow-pox, and in fifteen of the pupils at the school at Alfort pustules, such as occur in the vaccinella of Rayer, were produced by the introduction into their bodies of fluid from the same cow. Another horse was also inoculated from the cow, on a white spot of its skin; at the end of ten days, some vaccinal pustules developed themselves. The account of the method in which the fluid was obtained from the horse's mouth in the first instance is not very satisfactory. On the

inner surface of the lips were some bodies which resembled vesicles; but on pricking them no fluid exuded. The lancet was therefore introduced into the mucous membrane. A drop of blood appeared, and afterwards some serum; this was taken up by the lancet, and was the starting-point of this remarkable chain of effects.

A case bearing upon the question whether syphilis can be transmitted by vaccination occurred in the Hôtel Dieu, in September, 1862. A girl under treatment for catarrhal metritis, with granular ulceration of the os uteri, was vaccinated in the arm from a child apparently healthy, and born in the hospital. Four children were vaccinated at the same time from the same source. They experienced no ill effects; in the girl the punctures became slightly inflamed, but in five days they disappeared. Twenty-three days after the vaccination she returned to the hospital. Two erythematous pustules existed on the seat of two of the punctures on the left arm. These passed into rupial ulcers; the glands of the axilla and neck became indurated, and at last a roseola of indubitably syphilitic nature made its appearance. Ricord, who was consulted on this case, declared that it was impossible to affirm what was the source of the contagion (*Gaz. Méd.*, No. 1, p. 1, 1863).

Glatter relates the following case (*Oest. Ztschrft. f. prakt. Heilk.*, viii, 4; *Canstatt*, vii, 69, 1863):—A midwife got an unhealthy sore on her forearm while assisting in the confinement of a woman who was affected with syphilis. She continued to nurse her little grandchild, and to carry it in her arms. The child, apparently healthy, was vaccinated, and most of the children in the place were inoculated with lymph taken from it. In these infants the pustules passed into spreading ulcers; affections of the mouth and condylomata about the anus also showed themselves. Fissures appeared on the nipples of the mothers who suckled their children, and the affection reached even their husbands. (There is, however, no evidence that this was anything more than a case of inoculation of primary syphilis from the arm of the first child, which was exposed to direct contact with this poison.)

Dr. Bohn gives a useful survey of all that has been observed on the subject in *Schmidt's Jahrbuch* (1863, x, p. 97). He concludes that vaccino-syphilitic inoculation is a fact, and he adopts the theory of Viennois, that the source of the syphilitic contagion is to be looked for in blood introduced with the lymph at the time of vaccination.

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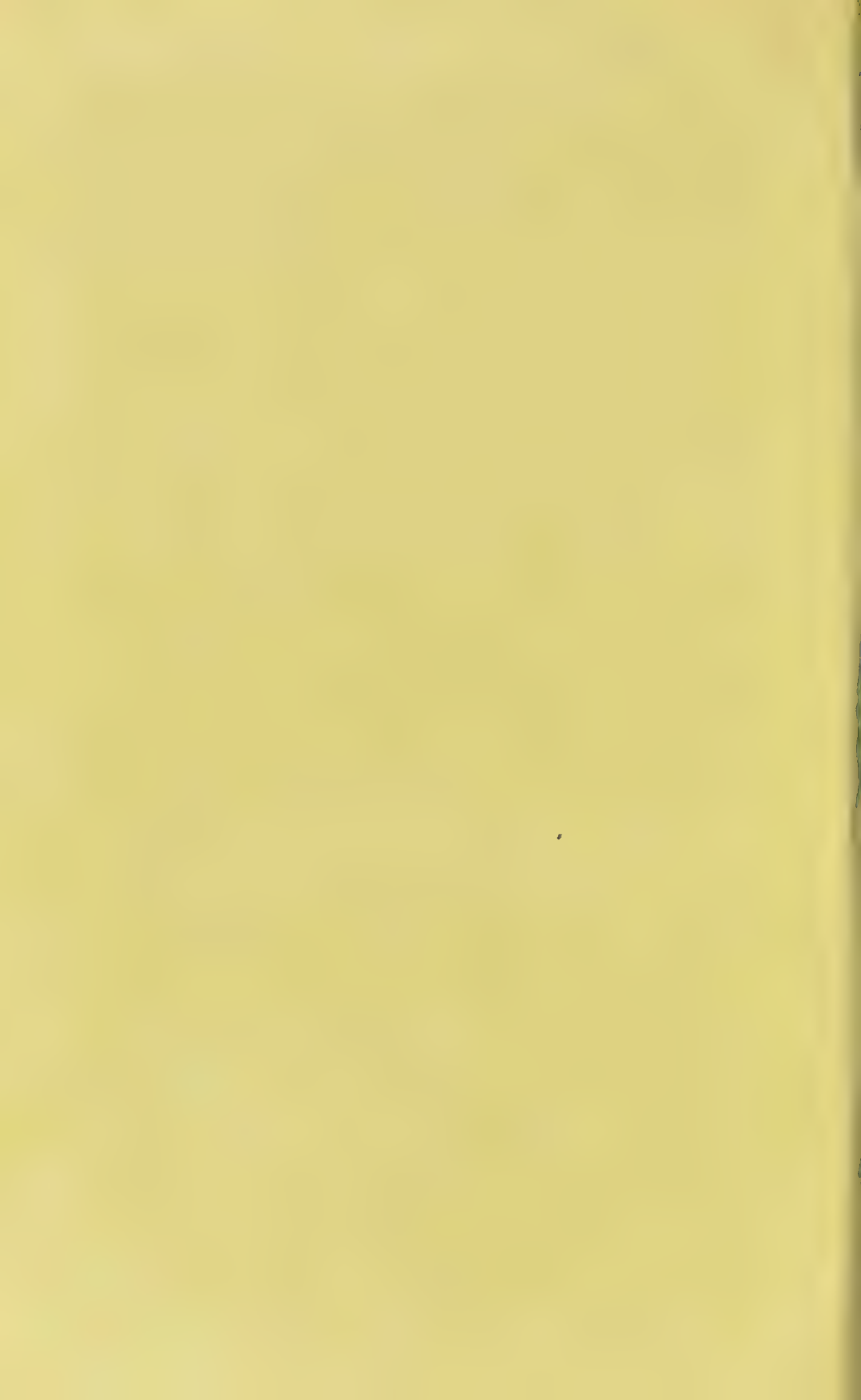
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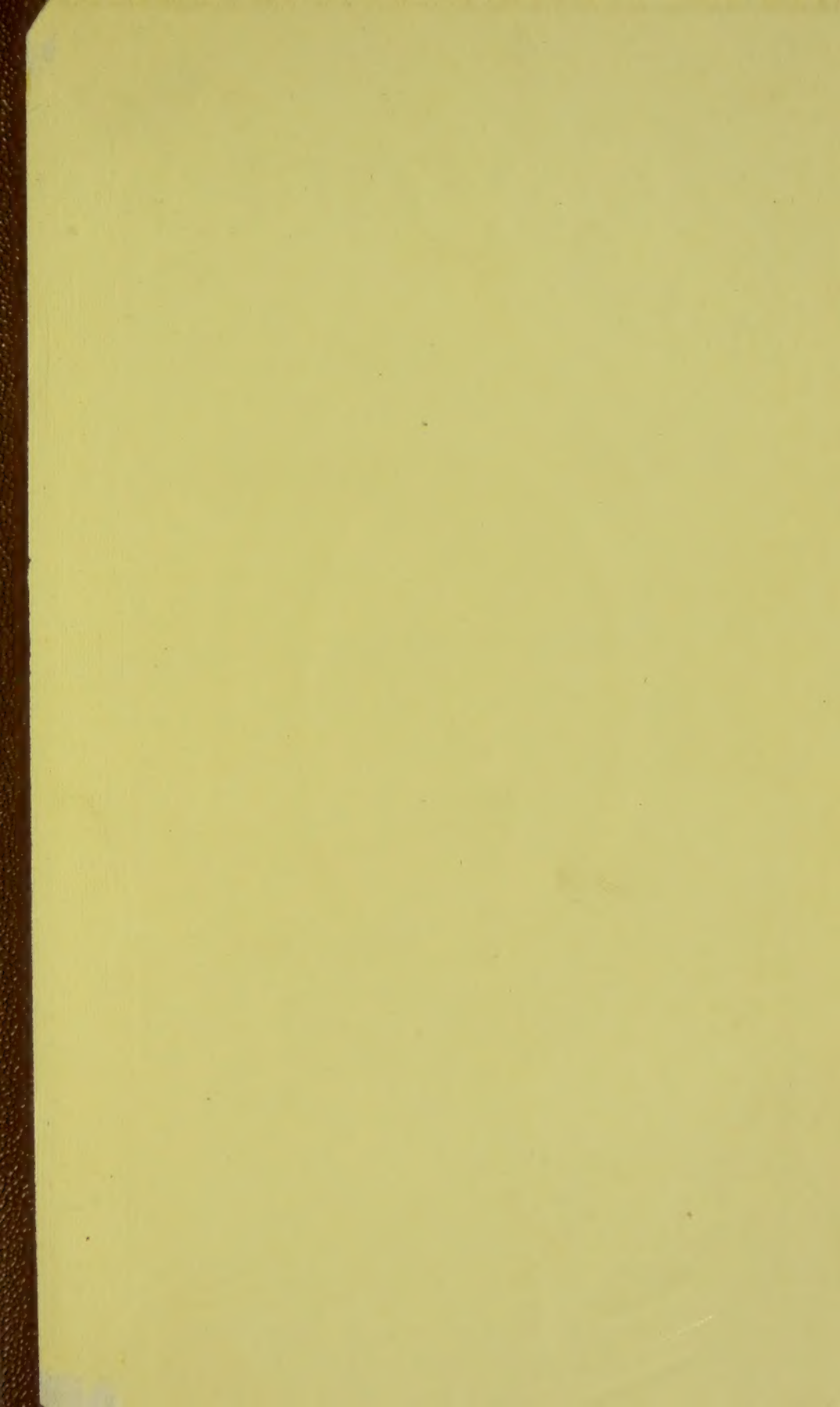
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